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Government to Regulate Wood Pulp Supply

No Deliveries of Wood Pulp May Be Made After April 30 Without Authorization of War Production Board — Object Is To Conserve and Equalize Distribution—General Preference Order Issued.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 18, 1942—Seeking to conserve supplies and direct the distribution of wood pulp, which has an important part in the war program, the War Production Board today placed the entire wood pulp industry under an allocation system, effective May 1.

Under the system, no deliveries of wood pulp may be made except by specific authority of the Director of Industry Operations. Pulp imported and reaching this country after noon, EWT, on May 1, will be held released by the Director. The Director has authorized administration of the order by the Pulp and Paper Branch.

General Preference Order M-93, which sets up the allocation system, will supplant General Preference Order M-52, which provided for the allocation of certain types of pulp among specified companies. The new order affects all grades of pulp and all companies, and is designed to conserve supplies and distribute equitably available pulp between competing war and civilian requirements.

Pulp Producers and Consumers Affected

The order requires pulp consumers, beginning next month, to file with producers on or before the fifth day of each month their orders for the following month on forms to be furnished by the WPB. In addition, each consumer is required to file with the WPB a report containing full information on consumption and inventories of pulp on a monthly basis. These reports must be filed on or before the 15th day of each month.

Producers must give the WPB reports on their advance shipping schedules, and these reports also must be submitted on or before the 15th of each month. The WPB will review all information submitted each month and then will direct what pulp deliveries may be made by producers and also what deliveries may be made from inventories held by any person.

Beginning May 1, producers are required to withhold for special distribution whatever portion of their monthly production may be decided from time to time by the Director of Industry Operations. Stocks which arrive in this country after noon, May 1, most of which will come, as at present, from Canada, cannot be released without the Director's approval. Persons who place orders for imports due to arrive after that time must notify the Director and must request the foreign producer to deliver the pulp in accordance with directions laid down by the Director.

All prohibitions concerning deliveries apply not only to deliveries from one individual to another but also to deliveries within branches of individual companies. A number of forms are required to be filled out in connection with the order, and will be furnished to pulp producers and consumers.

General Preference Order M-93

Whereas, the national defense requirements have created a shortage of wood pulp, as hereinafter defined, for defense, for private account, and for export and it is necessary, in the public interest and to promote the defense of the United States, to conserve the supply and direct the distribution thereof: Now, therefore, it is hereby ordered that:

1096.1 General Preference Order

(a) APPLICABILITY OF PRIORITIES REGULATION No. 1. This Order and all transactions affected thereby are subject to the provisions of Priorities Regulation No. 1 (Part 944), as amended from time to time, except to the extent that any provision hereof may be inconsistent therewith, in which case the provisions of this Order shall govern.

(b) DEFINITIONS. For the purposes of this Order:

(1) "Wood Pulp" means and includes pulp manufactured either by mechanical or chemical means from coniferous or broadleaf trees.

(2) "Other Fibrous Material" means and includes any waste material or virgin material of a fibrous nature other than wood pulp used in the manufacture of paper and paperboard or paper products.

(3) "Person" means any individual, partnership, association, business trust, corporation, governmental

(Continued on page 21)

Abitibi Bond Interest Now $66 Millions

Report of Financial Counsel Indicates A Reduction, Excluding Premiums On U. S. Funds, Has Been Made Since September, 1941 — Proposed Reduction On Bonds Will Effect Substantial Saving.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 16, 1942—Abitibi Power and Paper Co.'s total obligation to bondholders still amounts to more than $66 millions, exclusive of the premium on United States funds, according to "Financial Counsel". This would mean a reduction of over $5 millions since September 30, 1941.

The amount estimated by the receiver and manager as current month's interest requirements ($275,361) on the bonds would indicate that the total amount owing to the bondholders would be approximately that amount. Of this amount, principal would total $41,992,290, after giving effect to the distribution of $6,274,210 in October last, with the balance of approximately $24,000,000 interest, including interest on interest. This amount of $275,361 as one month's interest represents indebtedness, at the annual rate of 5%, of $66,086,575.

Interest Charges Analyzed

Going back to September, or prior to disbursement in mid-October, interest charges were mentioned for that month as $296,640, equivalent to an annual rate of 5% on $71,193,826, of which $48,267,000 would represent principal amount of the bonds outstanding and approximately $22,926,828 interest. Interest for October amounted to $283,568.63, which would be made up of $100,556.25 as interest for the half month on the principal amount of $48,267,000; interest of $87,483.93 for the latter half of the month on principal amount of $41,992,290 and interest of $95,528.45 on accumulated interest of $22,926,828.

In November the receiver provided $270,496.31 for interest for the month, which is equivalent to 5% on the reduced principal of $41,992,290 and interest on accumulations of $22,926,828, or on a total provision for the month at the annual rate of 5% on $64,919,-118.

The receiver revises the amount of interest at various periods throughout the year to provide for interest on unpaid interest, and in December the estimate of $275,361.73 was an increase from $270,496.31 the previous month.

Changes in Interest Made Twice Yearly

The change in estimated interest is made regularly for June and December of each year, representing the regular dates of payment of interest called for by the coupons. The estimate of $275,361 was repeated for January, 1942.

All these figures are expressed in Canadian currency, while principal and interest under the provisions of the bond are payable in United States currency. Hence the legal amount owing bondholders would be increased by approximately 10 per cent if payment is to be made in New York funds.

The estimate of interest of $275,360 for December, 1941, compares with $291,613 for December, 1940. As interest continues to accumulate the monthly requirements for interest, of course, will increase in some degree, but a further reduction will be effected when the proposed distribution of $100 per $1,000 bond is made. Giving effect to this second distribution, the company will have reduced the par value of the total bonds outstanding by $11,101,410, which means that there will be a saving on an annual basis of over $550,000.

OPA Requests Price Maintenance

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 16, 1942—Maintenance of price levels on kraft converting papers, coarse sulphite and tissue papers, at levels existing during the period from October 1 to 15, 1941, has been asked of approximately 200 manufacturers of these products by the Office of Price Administration.

An agreement form accompanied the request, together with a form for reporting price history and production data for the purpose of giving OPA information necessary for any further price action considered necessary.

Anticipating favorable response from the industry, the OPA indicated an intention to stabilize prices at approximately present levels on most grades for domestic and export sales. Sales below the agreement prices will be permitted and the customary differentials for sheets, distant shipments and small quantities will be maintained on the same basis that prevailed during the first half of last October.

Manufacturers willing to agree on the bulk of their production were urged to comply with the request on prices even though they may have unusual situations respecting some items.

Publishers to Conserve Newsprint

The newspaper committee to study methods of newsprint conservation and elimination of waste, authorized at a general conference of publishers on Feb. 18, has been appointed by Walter M. Dear of The Jersey City Journal, president of the American Newspaper Publishers Association, as follows:

National Editorial Association: R. B. Howard, London (Ohio) Madison Press; Inland Daily Press Association: Linwood I. Noyes, Ironwood (Mich.) Globe; Southern Newspaper Publishers Association: George C. Biggers, Atlanta Journal; New England Daily Newspaper Association: William Dwight, Holyoke (Mass.) Transcript; Pacific Northwest Newspaper Association: S. R. Winch, Portland (Ore.) Journal. Also E. M. Antrim, Chicago Tribune; William G. Chandler, Scripps-Howard Newspapers, New York City; Robert B. Choate, Boston Herald Traveler; B. N. Honea, Fort Worth Star-Telegram; John E. Person, Williamsport (Pa.) Gazette and Bulletin; E. Lansing Ray, St. Louis Globe-Democrat; Arthur Hays Sulzberger, The New York Times; S. E. Thomason, Chicago Times; T. J. White, Hearst Newspapers, Chicago Herald American.

Mr. Dear is an ex officio member of the committee.

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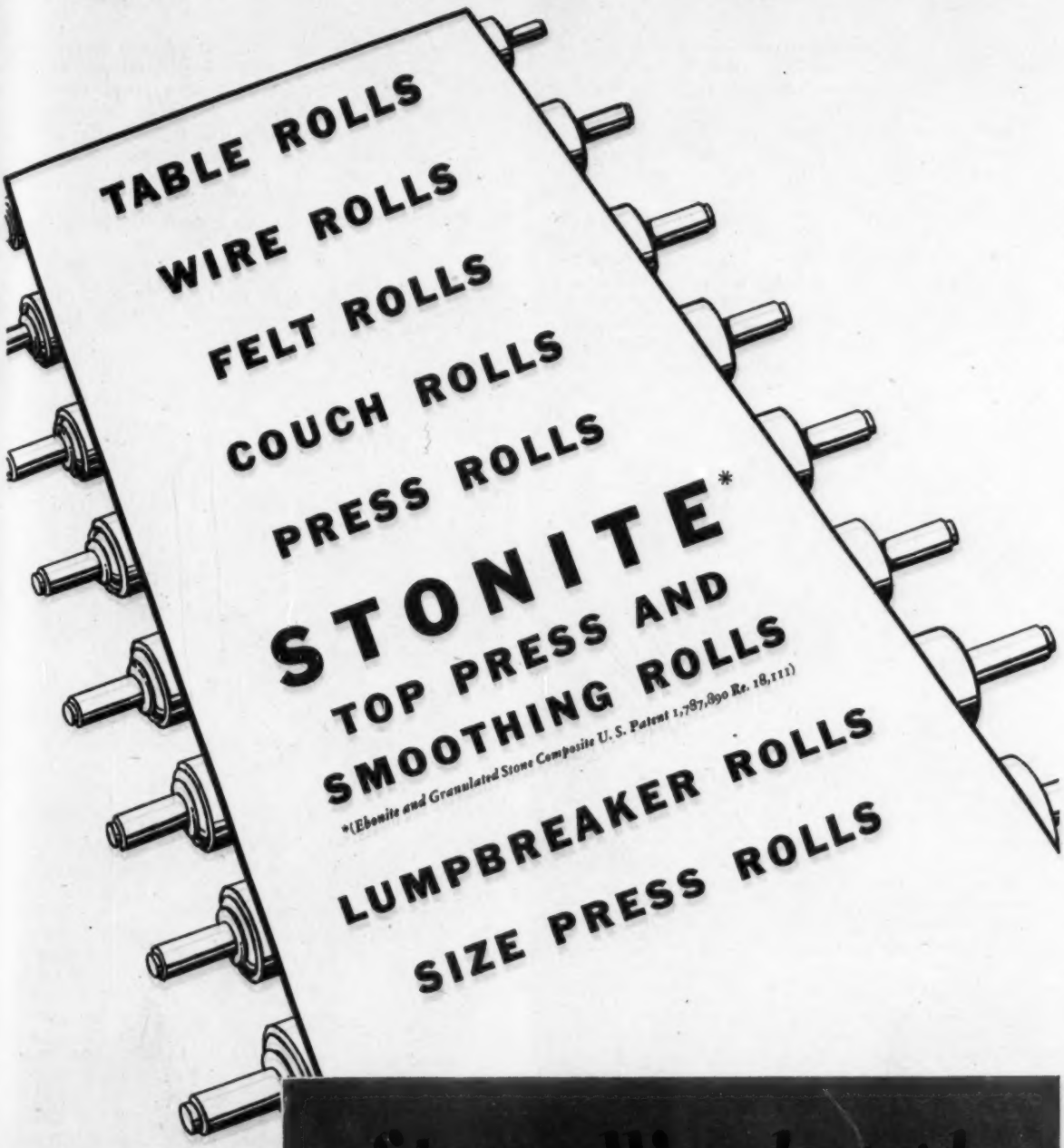

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THE RUBBER ROLL SPECIALISTS

Newton Upper Falls, Mass.

Decline in Book Paper Demand Aids Market

Decrease In Advertising and Less Consumption In Some Grades of Book Paper Aids Other Lines—Kraft and Sulphite Papers In Heaviest Demand — Salesmen Induct New Officers — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 16, 1942—The paper market here, appreciative of the official sentiment regarding the way it has been conducting its business, finds the "going" at least much more simplified as the first quarter comes to an end. Certain overages in some lines, such as in certain grades of book paper caused by marked decreases in the use of advertising literature, have benefited other lines in which shortages have been very apparent and the conversion program is said to be helping things materially. Sulphites continue to be in top demand because of their usage for Government work and this market ranks with krafts for sheer tightness all along the line. Newsprint markets are reported to have improved the situation with a decline in advertising program and economies affected by the newspaper industry becoming noticeable. Grownwoods have grown in demand as the other situations have developed in kindred lines. The waste paper program in Illinois has helped a lot in building Chicago up as one of the most available waste paper markets in the country. A study of the new Price Control bill has been a major issue in local association gatherings, the industry certain that the provisions of this Act now chart a comparatively clear road for future procedure.

Salesmen Induct New Officers

The western division of the Salesmen's Association of the Paper Industry held its first formal meeting under its new officers on Monday, March 2, at the Hotel Sherman. A record attendance of nearly sixty sales executives and guests came to greet Burt Fisher, Bergstrom Paper Company, new divisional vice president; Courtney Reeves of the Allied Paper Mills, newly elected president of the Salesmens Association of the Paper Industry and F. D. "Pat" Patterson of the Flambeau Paper Company who was elected second vice president of the western division. Al Sawyer attorney of the firm of Wise, Corlett and Canfield, attorneys for the American Pulp and Paper Association, was present at the meeting to discuss the new Price Control law and its relationship to and the duties of the Office of Price Administration of which Mr. John Wiegel is the head in this area. Mr. Sawyer traced the various provisions of the new statute, pointed out the stabilization effects it would have on the industry, singled out the penalty clauses and added that the paper industry would of course cooperate to the fullest extent not only out of a desire to develop stabilization but to prevent future inflation. Following his talk, the meeting was thrown open for forum discussion and many questions were asked. These centered around the questions involving introduction of new grades of paper wherein the price would be established and filed with the OPA and also indicated perplexity on the part of the industry as to what happens when prices on the same grades are frozen at two separate levels. The discussion indicated that in such an instance the actual price would center at the lowest of the levels. The entire meeting was one of the most interesting and thought provoking sessions yet held by the western division of the Association.

New Packing Offered to Trade

A new type of self-lubricating antifriction packing for the moving parts of machinery is the product of a new corporation with headquarters at 215 Illinois street in Chicago. The firm, known as Lubricated Metals Products Corporation, is reported to have developed the packing after much research in the field of powdered metallurgy. The packing does not require complete replacement when worn out but is merely added to according to reports from officers of the company. It is said to not score from heat generated by rod motion, combines both lubricant with packing material and is not affected by acids or nitroglycerin. Application for the packing has been found in the operation of heavy machinery and it is expected that the paper manufacturing industry will give it a thorough inspection. It is a soft, homogenous metallic compound without shredded particles or fibres and comes in the form of putty or in coils, depending on its use.

New Sutherland Program Popular

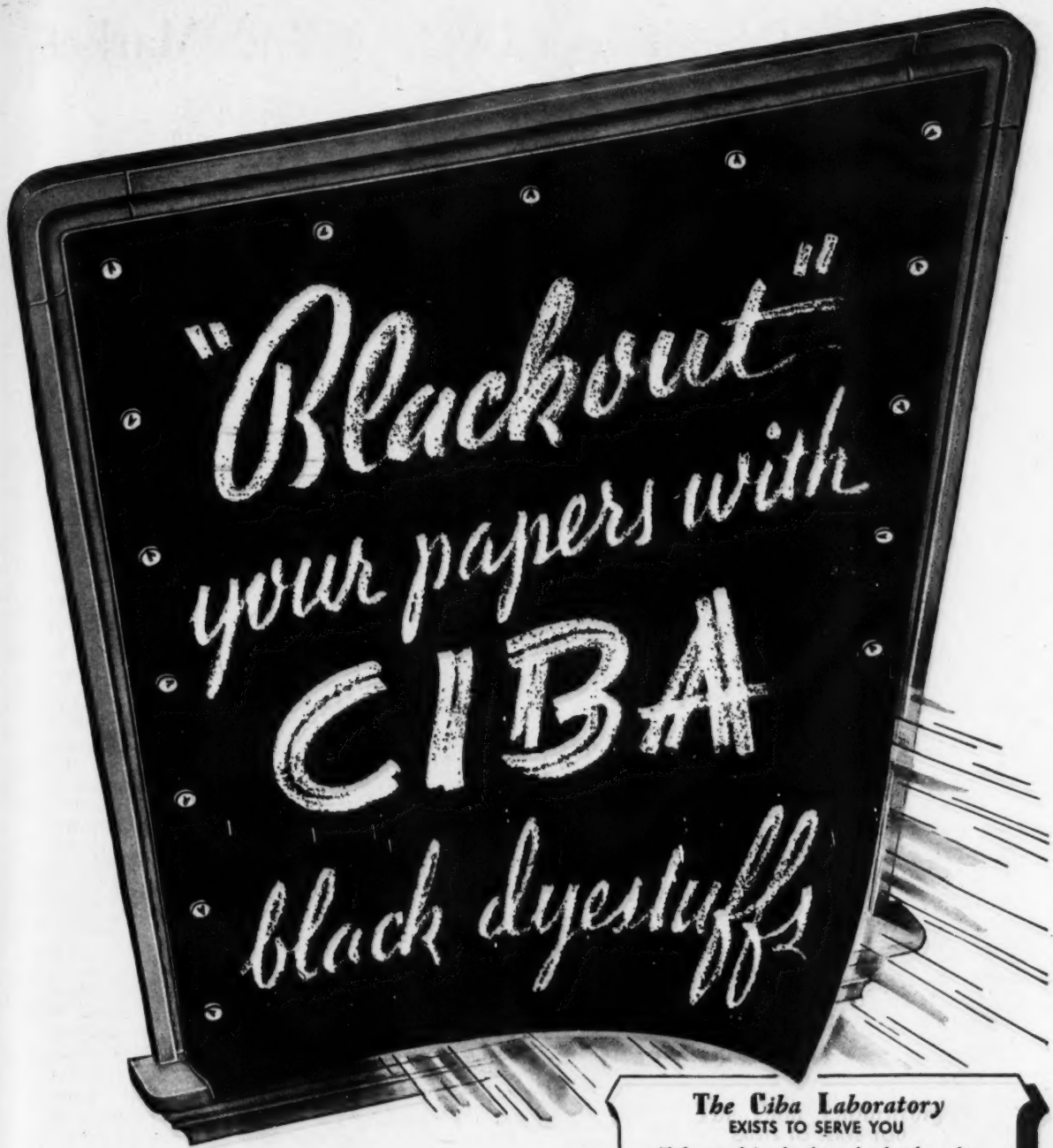
Chicago outlets for the Sutherland Paper Company have reported popular acceptance of a consumer advertising campaign to develop paperware sales this year. Advertising in national consumer publications is expected to be the key promotion of the program which will portray the complete Sutherland paperware line consisting of paper plates, luncheon sets, spoons, forks, cold drink cups and colorful matched sets for a variety of uses.

Envelope Converters Fear Shortage

Envelope manufacturers and converters in the Chicago area are now advising customers that they ought to immediately get into the market and buy envelopes. Comment from W. A. Sebastian, head of the Columbia Envelope Company, points out that "it would be wise to protect oneself on future envelope requirements at least a sufficient quantity for the next six months. Today we are confronted with the possibility of paper being rationed and a shortage of skilled labor and I am confident that you would be doing the wise thing by mailing us your inquiries by return mail".

Chicago Leads in Waste Drive

Chicago has become the No. 1 city of the nation on home scrap clean-up in the "Salvage for Victory" campaign, according to figures released this week by Nathaniel Leverone, Illinois state director of the general salvage campaign of the WPB. Chicago leads the list in the drive being made through central telephone exchanges in 38 key cities. More than 30,000 calls from individuals either selling scrap materials to junk dealers or donating their collections to charitable organizations were made during this month. All forms of scrap including waste paper and rags were in the month's collection of vital materials needed for arms production. "This is convincing



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Newsprint Industry Awaits Joint Decision

Announcement of United States-Canadian Governments On Future Newsprint Prices Expected By Canadian Producers Before April 1 — Waste In Pulp Manufacture — Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 16, 1942—The newsprint industry here is waiting with interest the outcome of the inquiry by the U. S. Government authorities on newsprint prices, and the view is expressed here, that there will be a joint U. S.-Canadian announcement on the subject before April 1, when the proposed increase of $3 per ton is scheduled to go into effect. As Canadian producers do not come under the Washington price control authority there has been no cancellation of their price announcement pending a decision by the U. S. Government.

Canadian newsprint producers have felt confident they can justify a price increase of $3 a ton for the second quarter of this year, on the basis of increased costs since the last price increase went into effect at the beginning of 1938.

Last year, Canadian newsprint producers operated around 75% of capacity, and late in the year added to their activities production of special paper on idle newsprint machines, for use in making paper boxes in the U. S. This new activity added considerably to earnings of the paper companies; and the necessity for increased newsprint production in recent months has forced reduction in production on this profitable new business.

As regards newsprint supply situation, the Canadian industry has, and probably will have this year, considerable surplus capacity—probably around the 25% surplus they had last year, inasmuch as overseas demand curtailment due to shipping difficulties is likely to offset any increase in U. S. requirements.

It is probable that the growing power shortage may force some curtailment in paper mill activity in Canada, but this is likely to be only moderate and affect only the surplus capacity that might be available for production of special papers. Shipping difficulties may increase but are unlikely to be serious so long as publishers spread out their purchases and do not attempt to take heavy deliveries all at once.

Britain Further Cuts Paper Imports

A despatch received here from London says that Britain's thin newspaper have announced a 10% reduction in their circulation, effective March 16, under a voluntary plan to conserve paper stocks and ease the shipping burden. Readers are being asked to share their copies with others.

The United Kingdom's consumption of pulp and papers is now but 24% of the pre-war level and the North American continent is now the sole source of supply. Of the imports some 35% is obtained from the United States and 65% from Canada and Newfoundland. In addition to the major supply of wood pulp, Canada and Newfoundland provide also all newsprint, carton boards, gummed kraft paper, and contribute substantially to the supply of building boards and kraft liner board.

Advance in Railway Freight Rates

The Canadian Board of Transport Commissioners is holding a hearing this month resulting from which may be a general increase to bring such Canadian charges into line with increases approved a few days ago by the United States Interstate Commerce Commission.

Railway freight rates come under the general price ceiling established in Canada last December 1 and before any increase could be granted the Wartime Prices and Trade Board would have to give its approval. The prices board has approved the boost in Canada-United States and United States-Canada rates but withheld its decision on other import and export rates pending the meeting of the Transport Commissioners.

Under the Canadian order, rates on newsprint paper from Canadian "basic groups"—areas on which the newsprint freight rate structure is based—may be advanced by the amount set out in the I.C.C. order. But "arbitraries," the amounts by which rates of points outside the basic groups vary from the rates of the groups themselves, are not to be changed.

Increased Forest Production in N. B.

The New Brunswick Government reports that the forest products of the Province in 1941 were valued at $42,000,000. This represented an increase of $1,000,000 over 1940. Territorial revenues at $1,332,659 were $50,659 more than the estimate, and exceeded the average for the previous 20 years by about one-third. Receipts from stumpage were $925,860 and were the highest in some years. The number of square miles under license was 10,442.

The six pulp mills in the province, in 1941, used 792,000 cords of pulpwood and operated at about a 92 per cent of rated capacity. There was a total of 403,000 cords of pulpwood exported, including 31,000 cords of hardwood representing an increase of some 40 per cent of the average from 1933 to 1940, and the largest on record.

During the past year, the total amount of pulpwood manufactured in and exported from the province amounted to 1,194,909 cords, being an increase of 68,539 cords over the best previous year, which was 1937.

Estimates for the current year are for a cut of 140,000,000 board feet of sawlogs, veneer logs, and piece products from Crown lands. The 1942 estimate of the pulpwood cut and other products is 300,000 cords.

Waste in Pulp Manufacture

Through a Waste Committee the Technical Section of the Canadian Pulp and Paper Association has been devoting much attention during the past year to waste in pulp manufacture. Losses have been traced through every process from transportation of logs to production of finished pulp. In a lengthy report as chairman of this committee, W. H. Birchard, of Fraser Companies, Ltd., stresses particularly the loss in sulphite cooking. He states that for every ton of pulp produced more than a ton of other wood components goes down the sewer. At a value of one cent a

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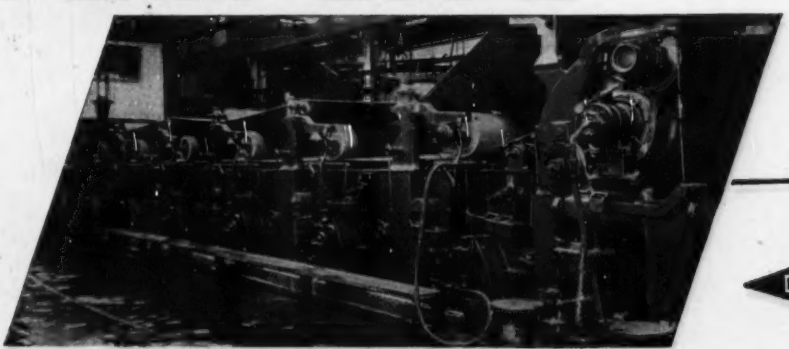

DOWICIDE* G—used as a germicidal solution to wash felts during shut-downs—has proven an effective means of preserving and increasing felt life.

In mills where felts are subject to heavy manufacturing loads and where there are no shut-downs between felt changes, DOWICIDE G is being added to the system continuously. Felt life extension of from 50% to 200% has resulted when a concentration of 50 parts per million has been used.

The trade mark DOWICIDE designates a group of chlorinated phenols widely used in the paper field. For complete information write to the Dowicide Division.

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- To prevent stain and decay on pulp wood.
- To control slime conditions.
- To prolong felt life.
- For rot and termite-proofing.
- For mold-resistant paper products.
- To preserve proteins, starches and other coating materials.
- To reduce maintenance costs.

pound, the waste from a 100-ton sulphite mill would have a value of $625,000 annually. In addition to the chemicals present in the waste sulphite liquid large quantities of heat are also lost. The cost of installing equipment for the recovery of cooking chemicals and heat is put at around $1,000 to $1,500 per ton of pulp. Waste liquor, when concentrated, may be used as a binder for making fuel briquets, as a core binder or for road surfacing, and one small mill is quoted as having sold its waste liquor for the past 20 years to the county authorities for dust-laying purposes. By the precipitation of the lignin compounds, material can be obtained for tanning compound, vanillan and plastics. As demand for plastics is unlimited it is considered that if waste liquor products were combined with sawmill waste in the production of synthetic board, this should prove a profitable way to dispose of both sawmill waste and waste sulphite liquor.

Toluene and alcohols to replace gasoline are other products, and the opinion is given that in the Eastern Canadian provinces, where gasoline is not produced, there is no reason why the production of gasoline should not be encouraged and the addition of 10% alcohol to all motor spirits be demanded. This would encourage the use of purely Canadian waste materials. The conclusion of the committee is as follows:

"This investigation has impressed the Waste Committee that heat recovery in itself is a profitable proposition, but when accompanied by a recovery of cooking materials and wood products it is doubly so, and will result in improved process control, reduced steam and chemical consumption, less upkeep in the acid towers and a decreased stream pollution problem. The entire recovery problem looks bright, and it is safe to say that with a well-equipped heat and chemical recovery unit, the sulphite mills of the future will be able to cook a more uniform and improved quality of pulp with less than 3000 pounds of steam, 140 pounds of sulphur and 200 pounds of limerock per air-dry ton of pulp."

Dilts Aids Defense Program

[FROM OUR REGULAR CORRESPONDENT]

FULTON, N. Y., March 16, 1942—Among the concerns in this section contributing greatly to the defense program is the Dilts Machine Works which produces special machinery that effectively treats waste paper. The concern was organized in 1867 as a general repair shop for servicing the mills in this locality. As the paper industry grew the plant was expanded to take care of specialized service and eventually a line of papermaking machinery was developed. Until 1920 the concern specialized in the production of beating engines for the preparation of paper pulp and these beaters have been sold in almost every country in the world where paper is produced. Recently the company installed a laboratory for the testing and developing of newer and better equipment and in recent years has made several prominent contributions in this field. The beaters, hydrafiners, classifiners and hydrapulpers are all making a big contribution to the paper industry in treatment of waste paper during the emergency. The Dilts Machine Company merged with the Black Clawson Company, of Hamilton, Ohio, in 1940. The local plant is under the management of John Haskell.

Heads Pulp and Paper Branch

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 16, 1942—A likeness is presented herewith of David J. Winton, chairman of the board of the Winton Lumber Company, Gibbs,

DAVID J. WINTON

Idaho, who was recently appointed chief of the Pulp and Paper Branch of the War Production Board.

Lake Sulphite Sale Completed

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 16, 1942—Further details of the final completion of the sale of the assets of Lake Sulphite Pulp Company, Ltd., to Brompton Pulp and Paper Company, Ltd., were announced today by Hon. Norman Hipel, minister of lands and forests for Ontario.

Mr. Hipel said the sale has now been brought to a successful conclusion and added that at the time Lake Sulphite Pulp went into receivership a few years ago, that company and its subsidiary, Nipigon Corporation, Ltd., held pulpwood concessions over large areas in the vicinity of Lake Nipigon and Nipigon Bay in the Thunder Bay district and had extensive plans under way for the erection and operation of a mill for the production of chemical sulphite pulp.

According to the agreement Brompton agrees to employ at least 500 men in the initial stages of development. This number, it is anticipated, will increase to well over 1,000. They will require at least 150,000 cords of pulpwood per year.

Give Party for John Appell

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 16, 1942—Storrs & Bement Company recently gave a party for one of their old-timers, John Appell, on the occasion of his 80th birthday. Mr. Appell has been connected with the paper business more than 40 years and is on the job every day. They call him "a great guy" because of his cheery philosophy and good nature.

[Another advertisement telling how different American industries are speeding up wartime production]

We've got to stretch it
TO WIN THE WAR

Taylor Instruments are helping fill America's wartime rubber needs

AMERICA needs rubber enough to go round. We've got to stretch our national stock of rubber, because the war has already cut us off from 97% of our normal rubber supply. We need rubber to fight this modern war.

To make sure we get it, America's great rubber industry is relying on Taylor temperature and pressure control instruments to do the vast job faster and better. Taylor Instruments insure precision exactness—automatically safeguard complicated operations—speed up the whole involved process. They are vital necessities to our wartime rubber program.

Here's some war work Taylor Instruments are doing. They help produce:

BETTER NATURAL RUBBER . . .

Within the next few months, production of U. S. Signal Corps assault wire will be stepped up 300%. This latex-covered copper wire, so fine that one man can carry ¾ of a mile of it, is used to lay battlefront communication lines. It must be tough, sturdy, micrometer-exact in size, 100% reliable. It is cured by specially designed equipment completely controlled by Taylor Instruments.

Bomber tires, like the 8-foot, 1000-pound giants on the 82-ton Douglas B-19 planes, have to be cured precisely right to stand the terrific impact of landing. They are now out of the experimental stage, in full production. Taylor coordinated control systems govern the exact curing process that gives them strength.

Gas mask production has jumped to millions of masks per year. The face-covering part, molded in one piece, can now be produced on a 24-hour schedule with the help of Taylor Flex-O-Timers to control the sequence of operations.

Rubber-lined, leak-proof gas tanks for planes, scarcely known a few months ago, are now produced by thousands. Taylor Instruments are steadily being added to help increase this mounting output.

BETTER SYNTHETIC RUBBER . . .

A large part of all synthetic rubber production is controlled by Taylor Instruments. Fact is, synthetic rubber could not be produced without the close control insured by such instruments. The first synthetic "pilot plants" were Taylor-equipped—the tremendous commercial plants use Taylor Instruments. They will help boost synthetic rubber production from 40,000 tons last year to the 600,000-ton yearly total America must achieve.

BETTER "RECLAIM" RUBBER . . .

The production of "reclaim" rubber has almost doubled—skyrocketing from 200,000 to 350,000 tons annually in two years. It will keep on rising, because Taylor Instruments help assure the exact time and temperature schedules of "reclaim" de-vulcanizing processes.

With the help of Taylor Instruments, *every* American industry can be geared to the "go" that will win the war. Taylor Instruments will help *you* produce more, produce better, save time, and save manpower. All through industry, Taylor Instruments have given faithful service for years. Depend on them in these war times. Depend on the "know how" of Taylor engineers to show you how to squeeze the last vital ounce of efficiency from your existing production equipment. Your country needs *producers*—that's why *you* need Taylor Instruments. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. Makers of the famous "Not 1 but 5" Fulscope Controllers.

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TEMPERATURE, PRESSURE, FLOW *and* LEVEL INSTRUMENTS

Patents Granted on Improved Wrappings

Three Paper Men With the Marathon Paper Mills Co. Are Granted Patents On Adaption of A Stretchable Transparent Coating To A Stretchable Transparent Sheet — Power Facilities Are Expanding.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 16, 1942—Development of improved transparent wrappings at its Menasha Products division, Menasha, Wis., is seen in patents granted to three men associated with the Marathon Paper Mills Company. The inventors are Allen Abrams, vice-president and technical director, and George W. Forcey, company chemist.

These men worked with Charles L. Wagner to invent a coated sheet material which, patent examiners ruled, was different in at least four features from any invention previously patented. The patent was issued under an application filed November 14, 1939.

The development, in substance, is the adaptation of a stretchable transparent coating to a stretchable transparent sheet.

Rights of manufacture or commercial exploitation have been assigned to the Marathon company.

G. E. Klack and K. J. Harwood of Neenah, Wis., have been granted a patent for a buckle applying machine. They have assigned the rights to the International Cellucotton Products Company, Chicago, Ill.

C. W. Hoeper Speaks at Banquet

C. W. Hoeper, vice-president of the Badger Paper Mills, Inc., was the principal speaker at the banquet of the Tri-State Council of the International Brotherhood of Paper Makers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers at Peshtigo, Wis. Sunday evening, March 8. More than 350 persons attended the gathering in the high school gymnasium.

Mr. Hoeper dwelt principally on the importance of paper and pulp in the defense program. He pointed out that if all of the paper and pulp mills in the United States were to cease operations immediately, "our participation in the war would end within two months, as we have less than two months' supply of paper on hand for use by the armed forces.

"Although not commonly regarded as important for military needs," he said, "wood fibre is employed in the manufacture of all our gun powder and high explosives, while paper has innumerable uses such as for shell casings, filters for gas masks, etc. Only as the billions appropriated by congress are translated into vital materials and supplies by human skill, will this tremendous outlay of money be of any avail in actually winning the war."

The speaker made a plea for a production efficiency greater than that of Germany, for a more intensive campaign to reduce lost time through accidents, and a willingness on the part of labor to give the same amount of time per week in the production line, while the present emergency exists, "as we are expecting of our neighbors and fellow employes who stand in the front lines of defense."

Union representatives from Wisconsin, Minnesota and Upper Michigan were in attendance at the conference. Sessions during the day were devoted to a discussion of labor relations, wages and other matters.

E. A. Meyer, president of Badger Paper Mills, extended a welcome to the visitors in a brief banquet address. Others who spoke included: E. B. Lambton, first vice-president of the Paper Makers brotherhood; I. B. Sullivan, first vice-president of the Pulp and Sulphite workers, and E. Noren and Raymond Richards, representatives of the brotherhoods.

Power Facilities Are Expanding

Power expansion operations are continuing in the Fox River Valley. The Wisconsin Public Service Corporation has received approval from the Wisconsin Public Service Commission to enlarge its Bayside steam generating plant at Green Bay, Wis. to increase its capacity to 80,000 kilowatts. The plans include installation of a new 36,000-kilowatt unit complete with boiler, auxiliaries, sub-station and building changes at a cost of $2,780,000. The plant capacity originally was 20,000 but one 30,000-kilowatt unit is now being installed. Priority ratings have not yet been obtained, and the method of financing has not been decided.

The Wisconsin Michigan Power Company, Appleton, Wis., has filed application with the public service commission for authority to construct a sub-station near Stiles, Wis., and a transmission line from that point at Oconto Falls. The cost is estimated at $73,800. W. E. Schubert, general manager, says the new 33,000-volt transmission line will close the connection between Oconto Falls, Wis., and the line from Appleton, Wis. to Iron Mountain, Mich., completing a program started a year ago. A hearing on the application will be held at Madison, Wis. March 24.

Paper Men Appointed to WPB

Two paper mill executives have been appointed to the bureau of industry operation of the War Production Board, under the reorganization which will set up 24 industrial branches. They are John R. Kimberly, manufacturing director of the Kimberly-Clark Corporation, Neenah, Wis., and Ben Alexander, president of Masonite Corporation, Wausau, Wis., who is also a director of several Wisconsin paper mills. The bureau is headed by Philip D. Reed. These men will be special assistants who will serve as "the official point of contact between the WPB and all committees or sub-committees" of the industries assigned to them.

Mills Donate Discarded Felts

Most of the discarded felts from Wisconsin paper mills are being donated to the Maple Leaf Fund, British and Canadian war relief fund organized in New York. The felts are being converted to normal and crib size blankets, and are being shipped to distressed families of British soldiers. It is estimated that from October, 1940 to December 31, 1941, a total of 81,512 blankets was shipped abroad, of which about 2,000 were lost at sea.

SOFT, CLEAR, IRON-FREE PROCESS WATER *SPEEDS PRODUCTION*

This is no time to risk spoiled lots, damage to precious equipment—the frequent results of impurities contained in all "natural" water supplies. Permutit* removes these impurities, gives you the process and boilerfeed water you need for smooth operation.

Permutit is the world's largest manufacturer of water conditioning equipment. Recommendations of Permutit are based on a study of your water supply and plant needs—and are backed by 29 years of experience. This advisory service is free to your engineers or consultants.

FREE BOOKLET—*"Conditioning Water for the Paper Mill."* You'll want to read this interesting discussion of water problems at the mill. Write for it today: The Permutit Company, Dept. I2, 330 West 42nd Street, New York, N. Y.

In Canada: Permutit Company of Canada, Ltd.
Montreal . . . Toronto . . . Winnipeg . . . Calgary

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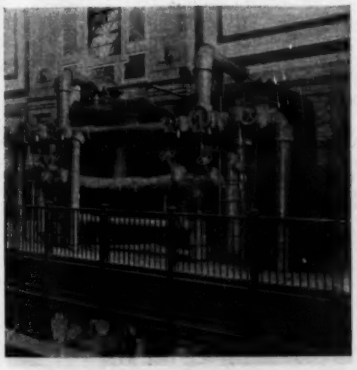
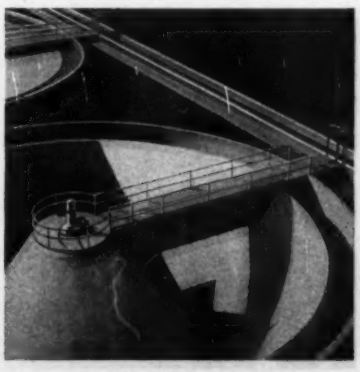


Zeo-Karb*, Permutit's new non-siliceous zeolite, reduces hardness to zero, reduces total solids and controls alkalinity at any desired value.

PERMUTIT MAKES EQUIPMENT FOR REMOVAL OF—

Sediment . . . Turbidity
Color . . . Organic Matter
Calcium Compounds
Magnesium Compounds
Silica
Iron . . . Manganese
Hydrogen Sulphide
Carbon Dioxide



Permutit's Spaulding Precipitator brings new speed to cold lime softening, iron and color removal. Takes less space, makes big savings in chemicals.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

Wisconsin mills contributing include: Consolidated Water Power and Paper Company, Cornell Wood Products Company, Hummel & Downing, Kieckhefer Container Company, Badger Paper Mills, Inc., Flambeau Paper Company, Bergstrom Paper Company, Fox River Paper Corporation, Kimberly-Clark Corporation, Marathon Paper Mills Company, Mosinee Paper Mills Company, Neenah Paper Company, Nekoosa-Edwards Paper Company, Northern Paper Mills, Nicolet Paper Company, Rhinelander Paper Company, Marinette Paper Company, Thilmany Pulp and Paper Company, Tomahawk Kraft Paper Company, and Whiting-Plover Paper Company.

Collect Income on Waste Paper Drive

Income of $1,512.73 was received from three months' operation of the Appleton Plant of Waste Paper Recovery at Appleton, Wis., according to a report issued last week. Approximately 105 tons were collected, mostly from homes, during that period and sold to salvage companies. A total of $850 was divided between the Boy Scouts and Girl Scouts who made the pickups at the homes. A six months' contract has been authorized for a continuance of the plan, using a price based on the government-fixed ceiling. The amount of paper collected in three months was more than is usually collected in an entire year.

Approve Appropriation for Forest Laboratory

An appropriation of $1,000,000 has been recommended for 1943 for the United States Forest Products Laboratory, Madison, Wis. This amount was approved by the House appropriations committee at Washington, and is $33,000 above the amount for the current fiscal year.

Thilmany Club Holds Dinner

The Quarter Century Club of the Thilmany Pulp and Paper Company, Kaukauna, Wis., enjoyed a dinner at the Hotel Kaukauna March 11. Motion pictures were shown by Winn Hess, transportation superintendent, and a ventriloquist act was put on by Dick Brown. All employees who have been with the company more than 25 years attended. The arrangements were in charge of L. C. Smith, personnel director.

Kimberly-Clark Building Addition

Kimberly-Clark Corporation has started construction of an addition to the finishing room of its mill at Kimberly, Wis. It will be one story and basement, 60 by 180 feet, of concrete, brick and lumber. The additional space is necessary for use in sheet finishing. Contract has been awarded to Fluor Brothers Construction Company, Oshkosh, Wis.

To Improve Port Facilities for Pulp

Navigation improvements in centers where considerable pulp and pulpwood are handled have been approved by the House of Representatives, and are expected to pass the Senate. These include an appropriation of $20,000 for the harbor at Marinette, Wis., and $27,000 for the harbor at Green Bay, Wis.

Moross Paper Co. at New Address

T. V. Moross Paper Company, importers and dealers in printing papers, San Francisco, Cal., announces the removal of its main office from 11 Commercial street to larger quarters at 206 Davis street, where it will carry a more complete stock of fine papers.

D. E. Cable Called into Service

Captain Donald E. Cable, C.W.-Res., has just been called into military service, starting March 27. He is to be stationed in Texas with the Dallas Chemical Warfare Procurement District.

His friends in the paper industry will recall that he was assistant director of the Oxford Paper Company's Research Department (1924-'30), a member of the Technical Association of Pulp and Paper Industry from 1924 to 1937, and chairman of the Pulp Testing Committee of TAPPI, for the years 1929-1932.

During the past 12 years, he has been employed by

DONALD E. CABLE

the U. S. Rubber Company, first as assistant to general manager of Fibre Products Department at Cleveland, Ohio (1930-'31) and since May, 1931 at the General Laboratories in Passaic, N. J.

In collaboration with *Rubber Age* (New York) he has aided in the publication of bibliographies of rubber literature for the years 1935 to 1939, inclusive. These bibliographies present organized and classified technical literature titles for the rubber industry in much the same manner as Dr. West's bibliographies have rendered corresponding service in the pulp and paper industry during the past 20 years.

Condensed Chemical Dictionary

The third edition of the Condensed Chemical Dictionary has just been issued by the Reinhold Publishing Company. It is a 750 page volume printed largely in 6 point type listing most of the known chemicals giving their physical properties and other constants, derivation, grades, methods of packaging and shipping and uses.

A large number of commercial products are referred to by trade name. These include drugs, pharmaceuticals, essential oils, leather processing agents, mothproofing agents, insecticides, fungicides, hydrogenated products, etc.

Copies may be obtained from the book department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y., at $12.00 per copy.

FROM THE ORIGINAL, PAINTED ESPECIALLY FOR NIAGARA ALKALI COMPANY BY MELBOURNE BRINDLE

STRAIGHTER and smoother runs the road when lanes meet to form a highway. For more than three decades the roads taken by Niagara Alkali Company and Electro Bleaching Gas Company ran parallel but remained separate. Today they are united—the two organizations have become one. Smoother service to the customers of each is the result. And the combined manufacturing resources, personnel and research facilities provide a broad highway upon which the new organization can move ahead into a broader sphere of activity. Forward-looking, progressive, and experienced, this company is now known as the NIAGARA ALKALI COMPANY.

EBG Niagara ALKALI COMPANY

60 EAST 42nd STREET, NEW YORK, N. Y.

CAUSTIC POTASH · CAUSTIC SODA
PARA · CARBONATE OF POTASH
Liquid Chlorine

GOVERNMENT TO REGULATE WOOD PULP SUPPLY

(Continued from page 7)

corporation or agency, or any organized group of persons, whether incorporated or not.

(4) "Producer" means and includes any person producing wood pulp as hereinbefore defined.

(5) "Consumer" means any purchaser of wood pulp, or person who receives wood pulp from a producer as hereinbefore defined.

(c) DIRECTIONS AS TO DELIVERIES.

(1) On and after May 1, 1942, no producer shall make and no person shall accept from a producer deliveries of wood pulp until the deliveries have been approved by the Director of Industry Operations in accordance with the following procedure:

(i) On or before the fifth day of each month, beginning April, 1942, each consumer other than the Army, Navy, and other agencies and governments referred to in Paragraph (b) of Priorities Regulation No. 1, as amended, including countries eligible to receive material or equipment under the Lend-Lease Act, shall file with a Producer his orders for wood pulp to be delivered during the following month on Form PD-290 in accordance with the instructions attached to that form.

(ii) On or before the fifteenth day of each month, beginning April, 1942, each consumer shall file with the War Production Board Form PD-291 showing his consumption, inventory and estimated receipts of wood pulp and other fibrous materials.

(iii) On or before the fifteenth day of each month, beginning April, 1942, each producer shall file with the War Production Board his proposed shipping schedule of wood pulp for the following month on Form PD-292, in accordance with the instructions attached to that form, together with copies of Form PD-290 filed with him under the terms of Sub-paragraph (i) of this paragraph.

(iv) Each Producer may make during each month, beginning May 1, 1942, only the deliveries approved by the Director of Industry Operations.

(2) No person shall make delivery of wood pulp from his inventory thereof to any person, and no person shall accept delivery thereof, except from a producer, without having first obtained the express authority of the Director of Industry Operations.

(d) WITHHELD DELIVERIES AND IMPORTS.

(1) During the month of May, 1942, and each calendar month thereafter, each producer shall withhold from his monthly production of wood pulp such portion thereof as may be determined and specified from time to time by the Director of Industry Operations. From the amounts so withheld, deliveries shall be made only upon express direction of the Director of Industry Operations.

(2) Any person having in his possession wood pulp arriving at its first destination in the United States at or after twelve noon, Eastern War Time, on May 1st, 1942, shall hold the same at the disposal of the Director of Industry Operations. Any person who has placed any order for wood pulp to arrive at its first destination in the United States after twelve noon, Eastern War Time, on May 1st, 1942, shall notify War Production Board of such order on Form PD-290 in accordance with the instructions attached thereto, and shall request the foreign producer to deliver such wood pulp in accordance with the directions of the Director of Industry Operations.

(e) INTRA-COMPANY DELIVERIES. The prohibitions and restrictions contained in this Order shall, in the absence of a contrary direction apply not only to deliveries to other persons, including affiliates and subsidiaries, but also to deliveries from one branch, division, or section of a single business enterprise to another branch, division, or section of the same or any other business enterprise under common ownership or control.

(f) NOTIFICATION OF CONSUMERS. Any person who is prohibited from, or restricted in making deliveries of wood pulp by the provisions of this order, shall, as soon as practicable, notify each of his regular consumers of the requirements of this Order, and of the cancellation as of May 1, 1942, of all deliveries of wood pulp previously contracted for, except such as shall be authorized hereunder, but the failure to give such notice shall not excuse any consumer from the obligation of complying with the terms of this order.

(g) RECORDS. In addition to the records required to be kept under Priorities Regulation No. 1, as amended, the Producer, and each consumer placing or receiving any purchase order hereunder, shall each retain, for a period of two years, for the inspection by representatives of the War Production Board, endorsed copies of all such purchase orders, whether accepted or rejected, segregated from all other purchase orders or filed in such a manner that they can be readily segregated for such inspection.

(h) REPORTS. Each producer and consumer covered by this Order shall file such reports and questionnaires as are required by Paragraph (c) of this Order and such other reports and questionnaires as may be required from time to time by the War Production Board.

(i) COMMUNICATIONS TO WAR PRODUCTION BOARD. All reports required to be filed under this Order, and all communications concerning this Order, unless otherwise directed, be addressed to:

"War Production Board
Washington, D. C. Ref: M-93"

(j) VIOLATIONS. Any person who wilfully violates any provision of this Order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this Order may be prohibited from receiving further deliveries of any Material subject to allocation, and such further action may be taken as is deemed appropriate, including a recommendation for prosecution under Section 35(A) of the Criminal Code (18 U.S.C. 80).

(k) APPEAL. Any person affected by this Order who considers that compliance herewith would work an exceptional and unreasonable hardship upon him, may appeal by addressing a letter to War Production Board, Ref: M-93, Washington, D. C. setting forth the pertinent facts and the reasons such person considers that he is entitled to relief. The Director of Industry Operations may thereupon take such action as he deems appropriate.

(l) This Order shall take effect immediately.

March 19, 1942

Obituary

R. H. Spaulding

ROCHESTER, N. H., March 16, 1942—Following a week's illness, former Gov. Rolland H. Spaulding, 68, of 76 Wakefield street, passed away March 14 at the Frisbie Memorial Hospital, a $300,000 gift to the city from the Spaulding families, which was opened to the public in January.

Mr. Spaulding was president of the Spaulding Fibre Company, with plants at Townsend Harbor, Mass., North Rochester, N. H., and Tonowanda, N. Y., manufacturers of leather board for heeling, fibre board for shoe stiffeners, suit cases, friction, etc., and various other kinds of boards.

The condition of the former chief executive did not become serious until last week when he was taken to the hospital. Boston specialists were summoned. His brother, former Gov. Huntley N. Spaulding, cut short his vacation at Pinehurst, N. C., and returned to Rochester to be with him.

Members of his family, who had maintained a vigil at his bedside since his condition became critical several days ago, were with him at the end.

Rolland Harty Spaulding was born at Townsend Harbor, Mass., March 15, 1873, the son of Jonas and Emeline (Cummings) Spaulding. He attended the grammar school at Townsend Harbor and then entered Phillips-Andover Academy, graduating in 1893. He then entered the fibre mill of his father to learn the business.

He was president of the Spaulding Fibre Co., vice-president of the Spaulding-Frost Company of Freemont, N. H., and a director of Spaulding, Ltd., of London, director of the Atlas Leather Company of Illinois and of the International Leather Company. In addition he was president and director of the Rochester Trust Co., vice-president of the First National Bank of Rochester, a director of the Rochester Chamber of Commerce, director of the Rochester Kiwanis Club, director of the United Life and Accident Company of Concord, director of the Gafney Home for the Aged and director of Rochester Building and Loan Association.

Mr. Spaulding was a delegate to the Republican National Convention in 1912, served as Governor of New Hampshire in 1915-16, was vice-president of the New Hampshire Defense League in 1917, and vice-chairman of the executive committee of the New Hampshire committee of safety during the first world war.

Several years ago he served as chairman of a committee appointed by the Governors of the six New England states whose job it was to advise the Governors what was the proper combination of railways to serve New England's best interests in railway transportation.

He leaves his widow, Mrs. Vera (Gowen) Spaulding; two daughters, Mrs. William H. Champlin, Jr., of Rochester, and Miss Betty Spaulding, a student at Harcum Junior College, Bryn Mawr, Pa., his brother, and a sister, Mrs. Marion Spaulding Potter of Greenwich, Conn.

Services were held March 17 at 2 P. M. at the First Church, Congregational, and burial was in Townsend.

Leonard A. Stade

Leonard A. Stade, 46, owner of the Cloverland Paper Company, Escanaba, Mich., was killed in an automobile accident March 9 near Manistique, Mich. His car and a truck collided on a highway, and death came shortly after he was taken to a Manistique hospital.

Mrs. Rose Carpenter

Mrs. Rose Carpenter, the last survivor of a group of families who founded the American Paper Company at De Pere, Wis. fifty years ago, died March 11 at the home of Mr. and Mrs. L. W. Scheuring at De Pere. Mrs. Carpenter was 83 years old, and was the wife of George Carpenter, one of the founders, who died fifteen years ago. The concern is now known as the Nicolet Paper Corporation.

First Wood Pulp Made 75 Years Ago

The first commercial manufacturer of paper from wood pulp in the United States began seventy-five years ago. An interesting account of this historical event appears in the *Editor and Publisher* for March 14, 1942. The author is Elizur Yale Smith, historian of the Federal Hall Memorial Museum, New York.

The honor of first making paper from wood pulp belongs to Wellington Smith, Sr., the article states. Mr. Smith was the active head of the Smith Paper Company, Lee, Mass., for forty years. The concern was founded by Elizur Smith in 1835 at Tyringham, Mass., under the name of Platner & Smith. The other partners included John Randolph Smith, father of Wellington Smith and Cyrus West Field, who later became a leading New York merchant and won fame as the instigator of the first Atlantic cable.

The wood pulp from which the first groundwood paper was made, was produced by Albrecht and Rudolph Pagenstecher. The Pagenstecher brothers interested Wellington Smith in their plan to manufacture pulp from wood. An abandoned factor at Curtisville, now Interlaken, in the town of Stockbridge, Mass., was equipped and the initial run of groundwood pulp was produced March 18, 1867.

Roger Egan Joins Soundview and Puget Sound Pulp Companies

Effective March 15, 1942, Roger Egan has severed his connection of twenty years standing with Bulkley, Dunton & Co. to join the Soundview Pulp Company and the Puget Sound Pulp and Timber Company as the Eastern representative of these two large Pacific Coast sulphite mills.

This new arrangement does not alter the sales arrangements of either company, as Mr. Egan will not handle sales problems. The regular sales agencies of the respective companies, including Bulkley, Dunton, will continue to function as usual.

Mr. Egan will make his office at the Lincoln Building, 60 East 42nd street, New York City, in Suite 603, to handle for these mills many matters that require attention in the East.

These two mills represent a very substantial portion of the United States Sulphite distributed in the pulp market being mills of 500 tons and 450 tons daily capacity.

—and maybe the boss is RIGHT!

WELL . . . . we don't exactly advocate changing over in the middle of the job. In fact we don't claim the earth for Taylor Spiral Pipe.

We do say that in Taylor Spiral you have a pipe that can efficiently and economically handle a wide range of jobs for which Standard Weight pipe of about *twice its weight* is commonly used. Some of these uses are listed opposite.

Thanks to its lighter weight Taylor Spiral Pipe offers big savings to users. In some sizes and weights, for example, the installed cost is only about half that of Standard Weight pipe. Yet the rugged reinforcing seam and fine construction give Taylor Spiral Pipe ample strength and service life to handle a big percentage of today's pipe jobs.

Sizes range from 4" to 42"; thicknesses from 18 gauge to 6 gauge; joint lengths up to 40 ft. All types of end joints and couplings are available and all kinds of fittings and specials, or complete fabricated assemblies, are produced by Taylor Forge.

Taylor Forge Pipe Catalog 404 may help you save steel and dollars. Write for it — today.

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P. O. Box 485
New York Office: 50 Church Street • Philadelphia Office: Broad Street Station Bldg.

● With these Taylor Light Wall Fittings it's easy to make a trim workmanlike job. Special factory-made fabrications are also available.

TAYLOR SPIRAL IS A "NATURAL" FOR

- ▶ High and Low Pressure Water Lines.
- ▶ Low Pressure Steam and Air Lines.
- ▶ Steam and Diesel Exhaust Lines.
- ▶ Vacuum and Suction Lines.
- ▶ Blower Piping.
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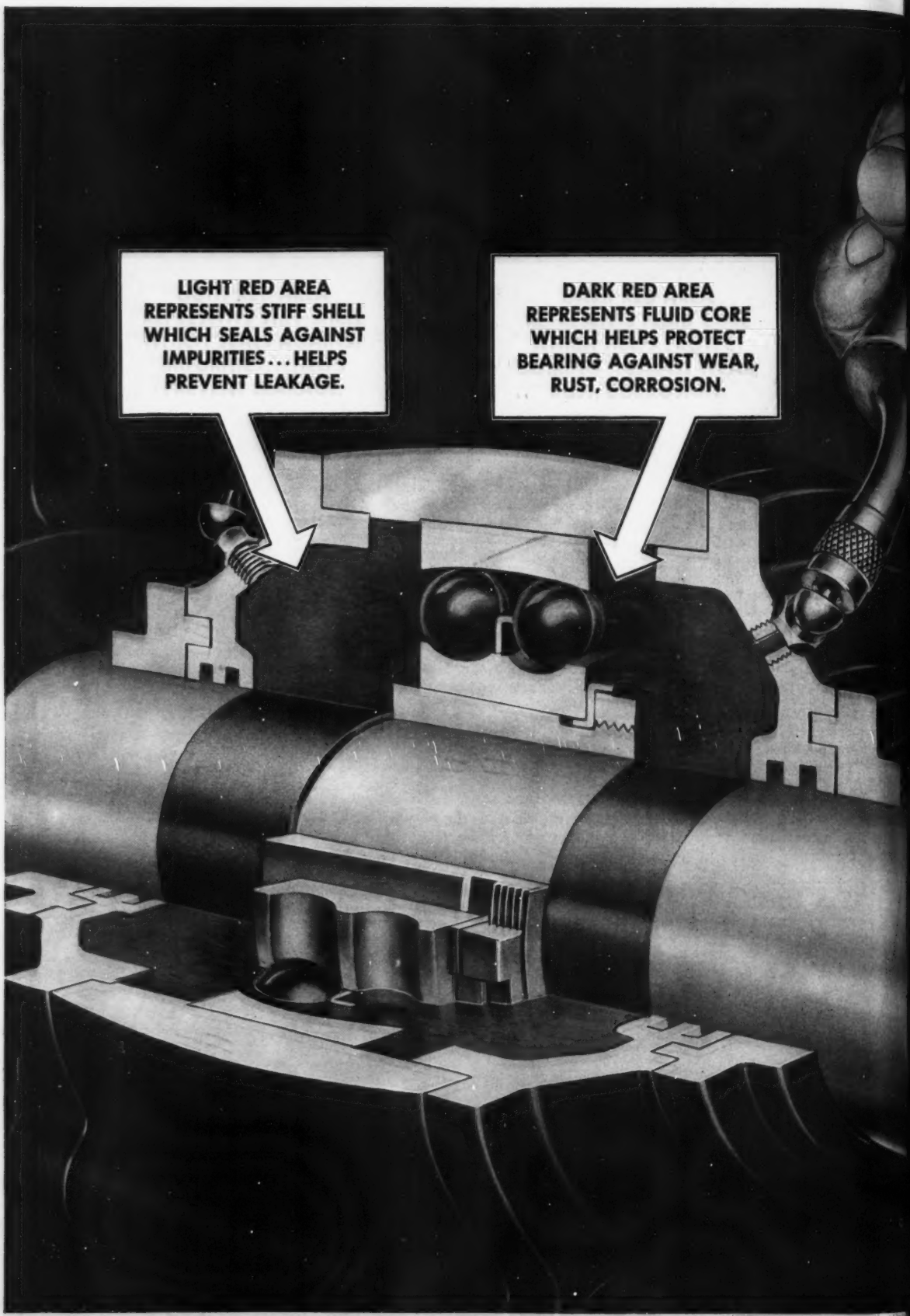
- ▶ Industrial Gas Lines.
- ▶ Oil and Gas Gathering Lines.
- ▶ Swing Pipe.
- ▶ Spray Pond Piping.
- ▶ Hydraulic Mining.
- ▶ Dredge Lines.

● Other Taylor Forge Products include: WeldELLS and a complete line of other Seamless Steel Fittings for Pipe Welding; Forged Steel Flanges; Forged Steel Nozzles and Necks for boiler and other pressure vessel outlets; Heavy-wall Electric-Weld and Forge-Weld Pipe; Seamless Rolled Steel Rings; Corrugated Furnaces, and similar forged and rolled steel products.

TAYLOR *Spiral* PIPE


LIGHT RED AREA REPRESENTS STIFF SHELL WHICH SEALS AGAINST IMPURITIES... HELPS PREVENT LEAKAGE.
DARK RED AREA REPRESENTS FLUID CORE WHICH HELPS PROTECT BEARING AGAINST WEAR, RUST, CORROSION.

Have You Tried the "Solid" Grease with the "Fluid" Core?

IT'S THE "CORRECT" ANSWER TO AN IMPORTANT PROBLEM IN BALL BEARING LUBRICATION:

Problem: Ball bearings are made with watch-like accuracy. Rolling elements and races are machined to a "mirror" finish. The chief lubrication problem is to obtain a stable grease that is *stiff* enough to seal against impurities and prevent excessive leakage, and, at the same time, is *soft* enough to guarantee low fluid friction.

Answer: *Gargoyle BRB Grease No. 2* is designed to combine the advantages of both stiff and soft greases without the disadvantages of either type. This grease works on the *cavitation principle.* Rotation of the rolling elements works the grease into a *fluid core.* This core helps protect races and rolling elements against wear, rust and corrosion. Meanwhile, the idle grease forms a stiff shell to seal the bearing against dirt and help prevent leakage.

TO HELP MAINTAIN CAPACITY PRODUCTION, CALL IN

SOCONY-VACUUM for "Correct Lubrication"

GARGOYLE Lubricants

SOCONY-VACUUM OIL CO., INC. – Standard Oil of N. Y. Div. – White Star Div. Lubrite Div. – Chicago Div. – White Eagle Div. – Wadhams Div. – Southeastern Div. (Baltimore) – Magnolia Petroleum Company – General Petroleum Corporation of Calif.

Unique Timber-Lock Platform

A platform called the Timber-Lock—a platform that by virture of its new and unique design uses no steel in the frame yet gives all the strength inherent in steel welding has been perfected by the engineers of the Yale & Towne Manufacturing Company. The Timber-lock is made of specially selected tough oak — and is so constructed as to practically defy breakage. A good part of this strength is traceable to a new interlocking "wood-weld" process developed by Yale engineers to tie supporting leg runners and deck boards into one virtually inseparable unit.

The accompanying illustration shows a close-up of Yale "Timber-Lock" locked-in-the-groove extra strength feature—showing how hard oak runner beam fits snugly into tight-fitting groove.

Instead of just placing the platform deck on the supporting leg runners and nailing—deep cut grooves run along the entire length of the platform deck boards. Into each of these grooves, the supporting hard oak leg beam is tightly fitted—thus interlocking platform and beams in a vise-like grip that completely eliminates rocking, shaking and other forms of instability. To further insure this one-piece rigidity, beam and deck are bound together with specially cement coated, spiralled Helical nails, binding platform and beams at double rowed 18" alternate intervals along the entire platform length.

The legs are of the highest grade formed steel bars, joined to the leg beam by heavy forged steel bolts. Washers on top and bottom of the bolts guarantee rigid clamp. Also, the large diameter steel washer under leg bolt heads provides wide bearing point and insures increased leg stability.

The Timber-Lock is available in all standard widths and lengths, plain or armored end. Also, vertical or standard leg design; four or six leg construction.

Encourage Non-Metal Containers

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 18, 1942—The War Production Board today revised and extended until June 30, 1942, Preference Rating Order P-79, which is designed to encourage the use of non-metal containers. The revised form brings paper containers within the Order and permits producers of non-metal containers to apply the ratings to obtain materials which can then be transferred to packers for assembly of knocked-down or unassembled containers.

The order continues to aid the operations of the cooperage, wooden container, and paper board container industries. A rating of A-5, as in the original order, is assigned to deliveries of ferrous material, defined as products made principally from iron or steel, except wire, to which a rating of A-7 is now applicable. Under terms of the original order, deliveries of wire had only an A-8 rating.

Producers are restricted in the application of the ratings to those quantities and kinds of ferrous materials specifically authorized for rating by the Director of Industry Operations on Form PD-82. All of the non-metal containers groups covered by the order may also use the A-5 rating to obtain tools used up in production, such as saws, bits, drills, and knives.

A feature of the revised P-79 permits cooperatives to apply ratings to obtain materials which can then be distributed to their members according to a specified procedure. In making use of the ratings, the producer or supplier must indorse the following statement on the original and all copies of each purchase order:

"Preference rating A-..... is applied hereto under Preference Rating Order No. P-79 with the terms of which Order the undersigned is familiar." The original Preference Rating Order P-79 would have expired on March 31, 1942.

Shows pH at Separate Sampling Points

Now, simultaneous records of pH at separate and independent points in a fluid-flow system can be utilized to provide a continuous "before and after" picture of pH that enables the operator to continuously see the effectiveness of the process or treatment in use, and accordingly, guides him to attain best results.

Already operating in central stations, this new development should prove of interest not only to power plant operators but to engineers and executives in the process and other industries where far-reaching economies may be influenced by the pH at different stages in a process or treating operation.

Such pH records render it easy to detect changes in operating conditions, thereby making possible the output of a more uniform product and the elimination of waste. The new instrument which provides these records is conventional in appearance but incorporates an outstanding advance in circuit design that permits installation of the measuring electrodes at separate and independent sampling points in the plant. They are connected electrically to the recorder which may be a considerable distance away.

The first application of the new multi-point pH Recorder was made in the power plant field, where corrosion of boiler systems is largely influenced by the pH of the feedwater. Continuous records from the instrument have proven so useful that operators of the original installation have already put additional units to work.

The pulp and paper industry has long recognized the need for adequate pH control in cooking, bleaching, sizing, coating, water-purification and other processes because it eliminates much waste of materials such as aluminum sulphate and rosin size; moreover, close pH control results in the production of a more uniform material, whether it be tissue or board. The manifold advantages that may be attained by having a single chart which continuously shows simultaneous determinations of pH at various points in the mill, such as in the beater, or in the head-box, together with the pH of white water for example, are self-evident.

This development comes from the Cambridge Instrument Company, 3732 Grand Central Terminal, New York City.

Haering Continues Expansion

D. W. Haering & Co., Inc., with general offices in the Engineering Building in Chicago have doubled the space occupied since moving to these quarters last July 1. In addition complete new service laboratory facilities have been installed in the plant at 2308 S. Winchester avenue, in Chicago and the laboratory facilities at West Monroe street in the same city are now devoted exclusively to research.

Recent personnel changes and additions include the promotion of H. C. Daggett formerly Eastern Division manager to the position of general sales manager. Appointment of Nat Bailey formerly chief chemist of Waukegan Coke & Chemical Company as research chemist in Chicago and addition of Tom Palen and Jarvis Johnson chemists in the Chicago Service Laboratory. Dr. Dyer B. Lake has been placed in charge of the New York Service Laboratory. F. H. Wright has been promoted to manager of the Chicago Winchester avenue Unit and O. R. Borngesser placed in charge of the Wichita Service Laboratory. D. R. Walser has been promoted to Chicago district managership, C. E. Erb to Wichita, Kansas district manager and E. H. Snyder to Houston, Texas district manager.

George Perry has been appointed West Coast manager and P. A. Dobson is now in charge of Los Angeles, Cal., territory and Joseph Paulson is in charge of Portland, Ore., and surrounding area. G. Knight-Smith has been placed in Dallas, Tex.; E. M. Lloyd in Baltimore, Md.; Walter Beschenbossel in Minneapolis, Minn., and R. C. Rohrdanz, Superintendent of Shelley Refining Company has returned to active service for Haering in the Houston, Texas, territory.

Frank W. Mrazek has been placed in charge of New Orleans, La., and W. S. Nathan has been added to the Milwaukee, Wis., staff. C. French and G. Conrow have been added to the Chicago Service Staff. W. F. Renner of Red Springs, N. C., has been placed in charge of North Carolina Operations.

Launches New Seamless Steel Program

The entrance of the United States into active participation in the war is given as the reason why the Seamless Steel Tube Institute, Gulf Building, Pittsburgh, Pa., has radically modified its so-called product development program inaugurated about a year ago. As its name implies, this program was originally designed to uncover new uses for seamless steel tubing and in other ways to buttress the industry against the possible effects of post war economic conditions. But since the paramount job of industry is now to win the war, and since this assignment overshadows every other peace-time consideration, the Institute is redirecting its promotional work until such time as planning for the future becomes more practicable. As one member put it, "If we don't win this war no industry will have a chance to better itself."

Specific steps taken in the new direction outlined include dissemination of technical data and useful practical information on tubing, together with such help as members of the organization may be able to give users of tubing to the end that designers, engineers and fabricators who specify or use tubing may have the maximum help possible in saving time and producing more war materiel. In other words, the new accent is upon service to tube users rather than a search for new users. For example, there are many money saving reasons why machine shops can, and should, use seamless steel tubing in the mass production of generally round or cylindrical parts. Ordinarily, the institute's promotion of its products for this purpose would be based entirely upon this money saving appeal. Now, however, the Institute proposed to advocate such uses of tubing purely on the basis of the savings in metal that can thereby be effected. Further, its main promotional work along these lines will be in the nature of literature and data that will aid the shop superintendent in calculating what size tubing to order for such purposes, and to help him get the tubing by putting him in touch with sources of supply.

New Meteor Electric Hoist Catalog

The Chisholm-Moore Hoist Corporation, manufacturers of hoists and trolleys, announces that a 28 page catalog, illustrating and describing the New CM Meteor heavy duty electric hoists, has just been released and is available to all industries.

This new colorful catalog completely describes all the features of the New Meteor. Illustrations are used throughout to picture practically every advantage. It contains a large colorful illustration of the New CM Meteor, detail drawings of the hoist, all types of suspension and trolley arrangements, and a list of accessories that are available.

Some of the more important features of the New CM Meteor Heavy Duty Electric Hoist include: streamlined design that provides compactness and eliminates excess weight; Aeroplane type cooling fins that quickly dissipate the heat generated by gears and load brake; fully enclosed, weatherproofed design that permits the Meteor to be universally used, indoors and out. And for extra safety, fully enclosed safety-type hook blocks, and a specially designed electrical system that permits only 110 volts to pass through the push button station . . . all of which are fully illustrated and described in the new catalog.

The New CM Meteor Heavy Duty Electric Hoist is the result of years of research and experimentation both in the laboratory and in actual field service. When finally placed on the market, these hoists proved their ability to facilitate production, release more man-hours for other operations, and afford complete safety to men and materials. CM Meteor Heavy Duty Electric Hoists are available in capacities of ½ ton and up.

A copy of the new Meteor catalog may be obtained by writing to the Chisholm-Moore Hoist Corporation, Tonawanda, N. Y.

To Start Hagar Straw Board Plant

The Mead Corporation of Chillicothe, Ohio, according to a press report, has sold the building and grounds of the dissolved Hagar Straw Board and Paper Company plant at Cedarville to the Ohio Tubular Products Company of London. The Cedarville plant will be remodeled and placed in operation. The character of the product is not mentioned.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending March 14, 1942

STOCKS

	High	Low	Last
A. P. W.	1¼	1	1
Armstrong Cork Co.	23½	22½	23
Celotex Corp.	7¼	6⅞	7⅛
Celotex Corp., pf.	67	67	67
Certain-Teed Products Corp.	2	2	2
Certain-Teed Products Corp., pf.	26¾	25½	25½
Champion Paper & Fibre Co.	16	16	16
Champion Paper & Fibre Co., pf.	99½	97	97
Congoleum Nairn Co.	14⅜	14⅛	14⅛
Container Corp. of America	12½	12⅛	12⅛
Continental-Diamond Fibre Co.	7⅜	7¼	7¼
Crown-Zellerbach Co.	11⅛	10¾	10¾
Crown-Zellerbach Co., pf.	79½	78½	78¾
Flintkote Co.	10¼	9⅝	10⅛
Robert Gair	2	1⅞	1⅞
Robert Gair, pf.	10	10	10
International Paper Co.	15	13	13
International Paper Co., pf.	56⅞	55½	56¼
Johns-Manville Corp.	60	58¼	59
Johns-Manville Corp., pf.	....	....	....
Kimberly Clark Corp.	....	....	....
MacAndrews & Forbes	....	....	....
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	26¾	26	26
Mead Corp.	6¾	6½	6½
Mead Corp., pf.	66	66	66
Paraffine Companies, Inc.	....	....	....
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	9⅝	9	9⅜
Rayonier, Inc., pf.	24⅝	24½	24½
Ruberoid Co.	18¼	17⅜	18¼
Scott Paper Co.	31½	31¼	31¼
Scott Paper Co., pf.	114	114	114
Sutherland Paper Co.	19⅛	18¾	18¾
Union Bag & Paper Corp.	8⅜	8¼	8½
United Paperboard Co.	3⅜	3	3
U. S. Gypsum Co.	45¾	44¼	45½
U. S. Gypsum Co., pf.	170¼	170½	170¼
West Virginia Pulp & Paper Co., pf.	102½	102½	102½

BONDS

Abitibi Pulp & Paper Co. 5s '53	57⅞	57⅞	57⅞
Celotex Corp. 4½s '47	95½	93½	93½
Certain-Teed Products Corp. 5½s '48	86	85	85½
Champion Paper & Fibre Co. 4¾s '50	104⅝	104⅝	104⅝
Champion Paper & Fibre Co. 4¾s '50	103	103	103
International Paper Co. 6s '55	105¼	105	105
International Paper Co. 5s '47	104⅞	104½	104½
Mead Corp. 4½s '55	105¾	105	105¾
West Virginia Pulp & Paper Co. 3s '54	103⅜	103¼	103¼

New York Curb Exchange

High, Low and Last for Week Ending March 14, 1942

STOCKS

	High	Low	Last
American Box Board Co.	4¼	4¼	4¼
Brown Co., pf.	....	....	....
Great Northern Paper Co.	32⅛	32⅛	32⅛
Hummel-Ross Fibre Corp.	4⅞	4⅝	4⅝
National Container Corp.	8⅞	8½	8½
St. Regis Paper Co.	2	1¾	1¾
St. Regis Paper Co., pf.	110¼	109	110¼
Taggart Corp.	3⅜	3	3

BONDS

American Writing Paper Co.	....	....	....

National Container Profits Up

The National Container Corporation and subsidiaries for 1941, reports a net profit, after $1,655,762 provision for Federal income and excess profits taxes of $1,073,435, equal to $3.25 each on 330,482 common shares. Including share of profits in unconsolidated subsidiary, earnings for 1941 were equal to $3.36 a share, company states. Net profit for 1940 was $795,671, or $2.40 a share.

Scott Paper Nets $2.46

The Scott Paper Company reports for 1941 net income of $1,939,629, equivalent to $2.52 a common share. This compares with an adjusted net income of $1,896,052, or $2.46 a common share for 1940.

Great Lakes Profits Up

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 16, 1942—Great Lakes Paper Company, Ltd., reports for the year ended December 31, 1941, a net profit of $453,146 after depreciation, bond interest, income and excess profits taxes, etc., equal to $2.27 a share on the combined 200,000 shares of class "A" and "B" preferred shares outstanding. This compares with net profit of $318,275 or $1.59 a preferred share in the previous year.

Both class "A" and "B" preferred stocks are entitled to dividends of $2 a share per year and were in arrears $8.75 per share as of Dec. 31, 1941.

Commenting on operations, W. E. Rowe, president, says: "The improvement to the sulphite pulp plant during the year has made pulp production an important department of the company's operations. The expansion programme for 1942 involving an expenditure of $300,000 for an additional digester will increase the sulphite pulp available for sale to a total of 40,000 tons, an increase of 15,000 tons per annum. It is anticipated that this additional capacity will be in full production during July or August. For many months the company has been unable to meet the market demand for sulphite pulp. The estimated value of the sulphite pulp that will be made available for sale should exceed $2,500,000 a year.

Wilbur C. Cochrane was elected a director at the annual meeting, filling the vacancy created by the resignation of W. J. Palmer. Other members of the board were reelected.

Nashua Nets $12.23

[FROM OUR REGULAR CORRESPONDENT]

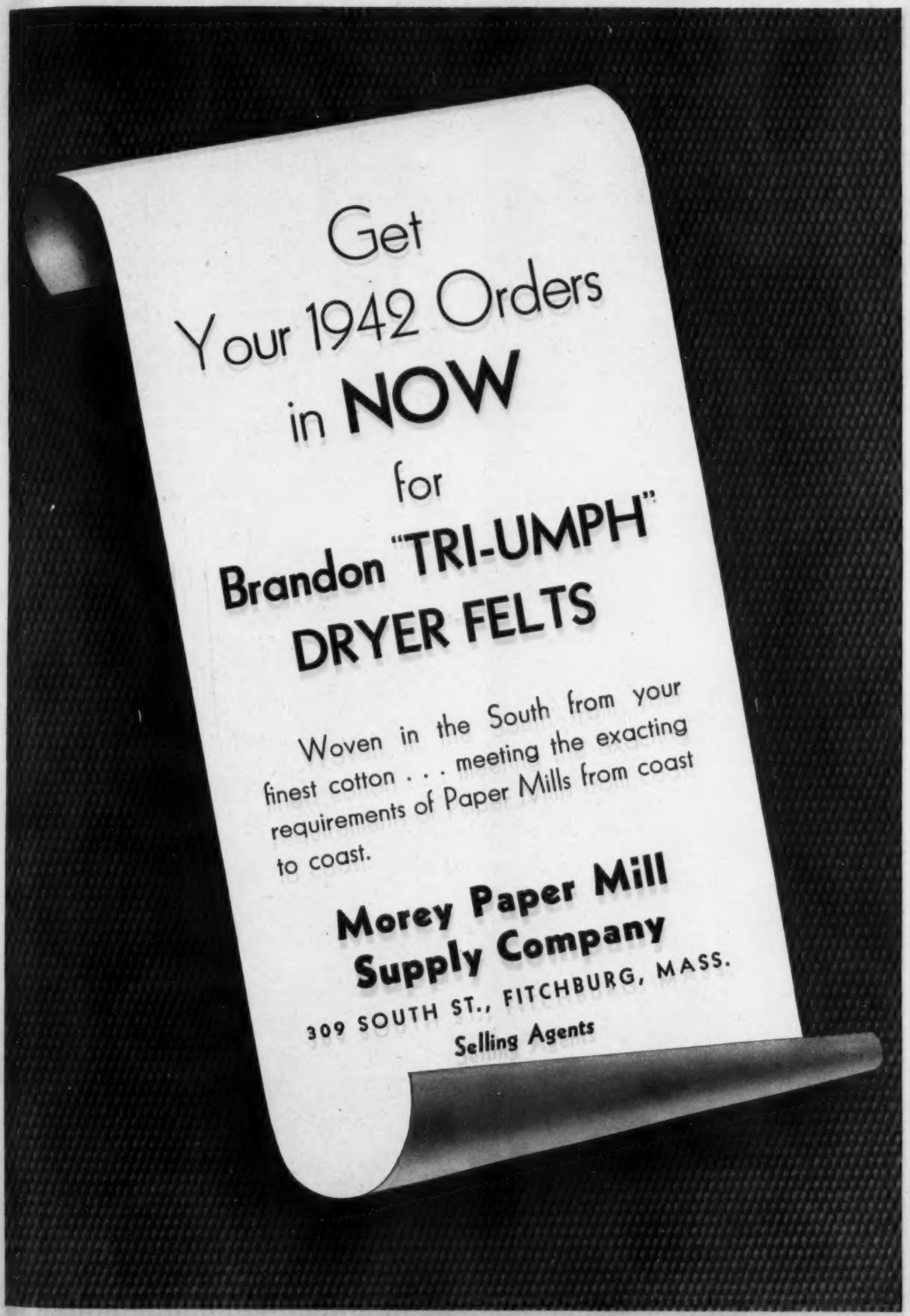
The Nashua Gummed and Coated Paper Company reports a consolidated net income for 1941 of $563,448, after provision for income taxes, excess profits taxes and foreign exchange adjustments, equivalent to $12.23 per share on 46,058 shares of common. These earnings compare with net for 1940 of $368,030, equal after preferred dividend requirements to $7.69 per share on the same number of common shares.

The balance of the entire issue of preferred stock was retired on January 1, 1941 and the capitalization now consists solely of the common stock.

Gair Co. Earns $1,127,140

For the year ended December 31, 1941, the net profit of Robert Gair Company, Inc., and its subsidiaries in the United States was $1,127,140 after provision for Federal Income and Excess Profits Taxes of $1,337,431 and Income Note interest of $284,010. The Company's interest in its wholly owned subsidiary, Gair Company Canada Limited appears only as an investment, from which no dividends were received in 1941.

Gair Company Canada Limited and its Canadian subsidiaries report, in Canadian Dollars, for the year ended December 31, 1941, net profit from operations of $278,049 after all charges and a provision for


Get
Your 1942 Orders
in NOW
for
Brandon "TRI-UMPH"
DRYER FELTS
Woven in the South from your finest cotton . . . meeting the exacting requirements of Paper Mills from coast to coast.
Morey Paper Mill Supply Company
309 SOUTH ST., FITCHBURG, MASS.
Selling Agents

Dominion Income and Excess Profits Taxes and Provincial Income Taxes of $315,224. This compares with Net Profit of $312,000 in 1940 after all charges and reserves for similar taxes of $330,000. These figures given for 1940 differ from those published in the annual report for that year due to a revision of the basis of Dominion Excess Profits Tax granted by the Minister of Finance after the annual report had been submitted to stockholders.

Oswego Falls Makes Good Report

[FROM OUR REGULAR CORRESPONDENT]

FULTON, N. Y., March 14, 1942—The annual report of the Oswego Falls Corporation shows that the net profit for 1941 jumped to $453,124. It represents a gain of $139,707 over the net for 1940 which was $313,417. The total is reached after all charges and provisions for federal and state taxes have been subtracted.

American Boxboard Nets $1.35

The American Box Board Company for the year to November 28, reports a net profit of $436,410, equal, after preferred dividend requirements on 7% preferred stock, to $2.94 a share on 121,363 common shares, compared with $243,829 or $1.35 a common share in year to November 28, 1940.

Great Northern Nets $2.44

The Great Northern Paper Company and wholly owned subsidiaries for 1941, reports a net profit, after $1,382,888 provision for Federal income and excess profits taxes, of $2,432,261, equal to $2.44 each on 997,480 shares, against 1940 net of $2,865,667, or $2.87 a share.

Schumacher Nets $2.34

The Schumacher Wall Board Corporation reports for the nine months to January 31, a net income of $220,799, equal after preferred dividends to $2.34 each on 66,000 common shares, against $182,393, or $1.93 a common share, for the nine months to January 31, 1941.

Celotex Earns $5,176,405

Celotex Corporation and subsidiaries for the three months ended January 31, 1942, reports a net income of $278,291 after taxes and charges, equal after preferred dividends to 37 cents a share on 638,410 common shares; year ago $456,865 before excess profits taxes.

Hummel-Ross Votes Dividend

The Hummel-Ross Fibre Corporation has announced a reduction in the dividend with a declaration of 10 cents a share on the common stock, payable on March 31 to stockholders of record March 16. Four quarterly payments of 15 cents were made last year in addition to an extra of the same amount.

Eaton Earned $1.76

The Eaton Paper Corporation for 1941, reports a net income of $101,686, equal after preferred dividends to $1.76 each on 34,643 common shares, compared with 1940 net of $47,107, or 18 cents a common share.

Deny FTC Charges

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 18, 1942—Eight manufacturers of cylindrical liquid tight paper containers and the trade association of which they are or have been members filed answers to a Federal Trade Commission complaint denying that they have used or are now using any methods or means designed to suppress and prevent competition in or restrict and restrain the sale of their products. The answers were filed by the following respondents:

Liquid Tight Paper Container Association, 1532 Lincoln-Liberty Building, Philadelphia, and its secretary and manager, George J. Lincoln, Jr.; Boothby Fibre Can Company, 84 Linden Park street, Boston; Gordon S. Smith and George T. Hynes, trading as Champion Container Company, Third and Somerset streets, Philadelphia; Fonda Container Co., Inc., 2150 Erie street, Utica, N. Y.; Menasha Products Company, Menasha, Wis.; Minkoff & Rosenfield Brothers, Inc., trading as Miro Container Company, 557 DeKalb avenue, Brooklyn; Russell Box Company, 200 Boston avenue, Medford, Mass.; Sealright Company, Inc., Fulton, N. Y., and Sutherland Paper Company, Kalamazoo, Mich.

The respondents deny that, pursuant to any agreements or understandings among themselves, they have engaged in the practices alleged in the complaint, including the fixing and maintaining of uniform delivered prices and discounts and uniform sizes, colors and quality of materials for their products; the use of a zoning system whereby the United States is divided into certain zone areas so that all purchasers within a given zone area, regardless of the distance of their places of business from the place of business of a respondent manufacturer, receive the same delivered price; and the arbitrary classification of their respective customers either as jobbers or as consumers and the establishment of uniform price differentials between the respective classes.

Denial also is made of the allegations that the respondent manufacturers, by agreement, file with the association their price lists and abide by such filed prices.

The respondents further aver that since January 31, 1941, they have not operated under a quota agreement which, the complaint alleged, exacted penalties from the respondent manufacturers whose volume of business exceeded their respective quotas and provided payments for those selling less than their quotas. Menasha Products Company was never a party to such quota agreement, it is asserted.

Russell Box Company denies that it is now a member of the association and avers that it has not manufactured round paper containers since July 1, 1941, and has not sold such products since December 31, 1941.

Hearings will be held in due course.

Kimberly-Clark Nets $4.72

The Kimberly-Clark Corporation showed a net profit on common stock of $2,306,389.89 for the twelve months ended December 31, 1941, according to its income statement issued last week. This is equal to $4.72 per common share on 488,173 shares outstanding, as compared with $3.44 for the comparable period of 1940.

Engineering Schools in Wartime

The vital role played by engineering schools in training men to speed America's war production was pointed out Wednesday, March 11, by Henry Townley Heald, president of the Illinois Institute of Technology, at a dinner-meeting of New York alumni held at The Chemists' Club, 52 East 41st street, New York.

Another speaker of the evening was Harold Vagtborg, director of the Armour Research Foundation, a non-profit organization affiliated with the Illinois Institute of Technology, which recently completed its fifth year serving industry in scientific research, development and experimental engineering. Mr. Vagtborg discussed the need for research in the world of today and cited work done by the Foundation in the fields of chemical engineering, experimental engineering, metallurgy and physics.

The Institute's building fund passed the million-dollar mark last month when Wilfred Sykes, president of Inland Steel and chairman of the trustees' policy committee, turned over a check for $1,100,000 to President Heald.

Included in the building program is the construction of seven new structures; a Metallurgical Engineering Building at a cost of $550,000; a Mechanical Engineering Building at $600,000; a Chemical Engineering Building at $450,000; an Electrical Engineering Building at $500,000; a Humanities Building at $400,000; and Library and Administration buildings at $600,000. Work on the Metallurgical Engineering Building will be started next spring.

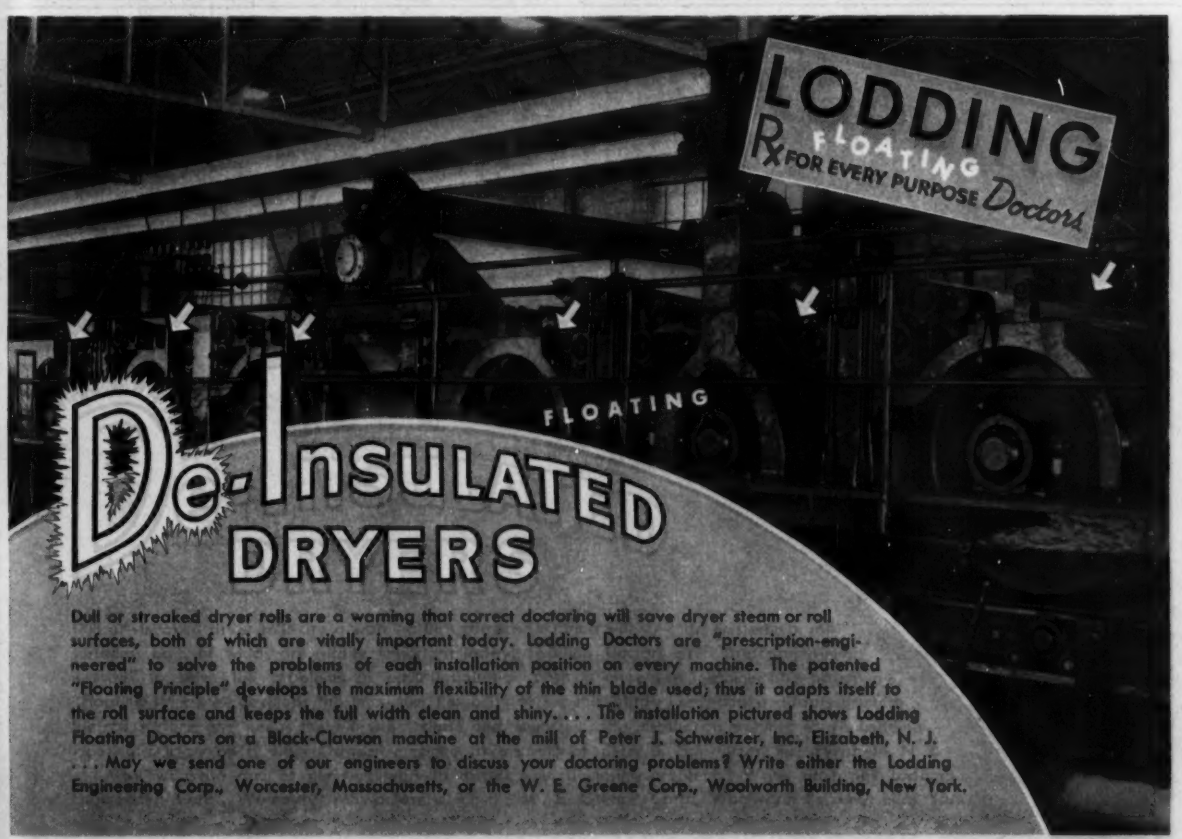
Robert I. Wishnick, president of Wishnick-Tumpeer, Inc., and C. Donald Dallas, president of Revere Copper and Brass, Inc., were the hosts of the evening.

St. Regis Makes Changes at Oswego

OSWEGO, N. Y., March 16, 1942—Announcement is made by the St. Regis Paper Company of a number of promotions in the different departments which will be placed in effect immediately. The new arrangement is expected to speed up the production of defense materials and the plant is now running twenty hours daily, seven days a week.

Louis N. Brenner has been relieved of all duties of plant management and has been given greater responsibility in which his entire time is devoted to bringing war contracts to the company. His contacts are made with all war production field offices in this area and in industries with prime contractors, his scope of operations to cover the entire country if necessary. He has already accomplished excellent results, according to the management. His successor has not yet been appointed but instead a system of plant supervision has been arranged with responsibilities shared by several. In this connection, Edwin V. Nessling will retain his duties as shop superintendent with Thomas J. Haley in charge of the scheduling and sequence of all plant operations. The latter has been office manager for some time.

Carl Marquardt has been placed in charge of the storeroom, having supervision of all receiving and stores, and Guy Rigor has been given supervision of plant maintenance, repairs, etc. The latter has been head of the ordering department. James Ratigan has been made an assistant to Mr. Marquardt. Announcement is also made that Sanford Lally has been appointed office manager to succeed Mr. Haley and James Murphy has been transferred from the shop to the plant office to take the former's place.


LODDING
FLOATING
Rx FOR EVERY PURPOSE Doctors
FLOATING
De-Insulated
DRYERS
Dull or streaked dryer rolls are a warning that correct doctoring will save dryer steam or roll surfaces, both of which are vitally important today. Lodding Doctors are "prescription-engineered" to solve the problems of each installation position on every machine. The patented "Floating Principle" develops the maximum flexibility of the thin blade used; thus it adapts itself to the roll surface and keeps the full width clean and shiny. . . . The installation pictured shows Lodding Floating Doctors on a Black-Clawson machine at the mill of Peter J. Schweitzer, Inc., Elizabeth, N. J. . . . May we send one of our engineers to discuss your doctoring problems? Write either the Lodding Engineering Corp., Worcester, Massachusetts, or the W. E. Greene Corp., Woolworth Building, New York.

CONSTRUCTION NEWS

Tacoma, Wash.—The St. Regis Paper Company, Kraft Pulp Division, 801 Canal street, has completed plans for new boiler house at plant, estimated to cost over $50,000, with boiler units and auxiliary equipment. A building permit has been issued and work will be placed under way at once.

Clifton, N. J.—Eastern Corrugated Container Corporation, 86 34th street, Brooklyn, N. Y., manufacturer of corrugated boxes and containers, has approved plans for alterations and improvements in a one-story industrial building on Clifton boulevard, Clifton, and will occupy for branch plant, expanding present capacity. Work is reported to cost close to $50,000, including equipment. Saul Shaw & Company, 24 Walnut street, Newark, N. J., are structural engineers for project.

Philadelphia, Pa.—The Superior Paper Box Company, 625 West Thompson street, manufacturer of paper boxes and containers of various kinds, has leased a two-story building at 465-67 North Eighth street, and will occupy for expansion. Possession is scheduled to be taken at once.

Kaukauna, Wis.—The Sangamon Paper Mills, Inc., manufacturer of kraft paper stocks, etc., will hold in temporary abeyance proposed new addition to mill, previously referred to in these columns and for which call for bids was scheduled to be made soon. It is understood that work will be authorized in near future. New structure will be two-story, about 48 x 60 feet, designed for expansion in main mill. Estimated cost has been previously reported in excess of $50,000, including equipment.

Chicago, Ill.—The Thomas Paper Company, 860 Evergreen avenue, commercial paper stocks, will make improvements in plant, including installation of facilities for handling paper bales. No estimate of cost has been announced. Contract has been awarded to Joseph Slonim, 1100 South Kostner avenue, Chicago, and work will be placed under way at once.

New Haven, Conn.—The New Haven Pulp and Board Company, manufacturer of news board, chip board, coated and other paper board products, will make alterations and improvements in buildings at 9-23 Railroad avenue, used for part of mill. No estimate of cost has been announced. General contract for work has been let to C. W. Blakeslee & Sons, Inc., Waverly street, New Haven.

Pensacola, Fla. — The Santa Rosa Pulp and Paper Company, Inc., recently organized by officials of the Florida Pulp & Paper Company, U. S. Highway 29, Pensacola, as an affiliated interest, will have plans prepared by Hardy S. Ferguson & Co., 200 Fifth avenue, New York, N. Y., consulting engineers, for proposed new mill at Cantonment, in vicinity of plant of parent company, recently referred to in these columns. Work on railroad siding to new plant site is in progress and land is being prepared for building erection. New mill will be constructed and operated for Defense Plant Corporation, a subsidiary of Reconstruction Finance Corporation, Washington, D. C., which will provide necessary financing and retain title to property. Output will be for Government service. Plant has been designed as a semi-chemical pulp and cylinder board mill, and will produce wood pulp for papermaking service under a special process without the use of chlorine. As has been previously stated in these columns, plant machinery will comprise reconditioned equipment for largest part, with new machinery to an amount of about $100,000 to be purchased. It will have a rated output of about 100 tons per day, and will represent an investment of about $800,000, including site, buildings and machinery. J. H. Allen, president and general manager of parent company, will occupy the same offices with new company.

Chicago, Ill.—The American Colortype Company, 1151 West Roscoe street, manufacturer of paper goods, has leased the four-story and basement building at East Ontario street and Fairbanks court, totaling about 98,000 square feet of floor space, for a term of years, and will occupy for expansion.

Kansas City, Mo.—Fire recently damaged the storage and distributing plant of the Kansas City Waste Paper Company, 1316 West Eighth street, with loss reported close to $50,000, including equipment. It is planned to rebuild in near future.

Watervliet, Mich.—The Watervliet Paper Company, manufacturer of coated and other paper stocks, card and bristol stocks, etc., has advanced the wages of employes at mill by five cents an hour, effective March 1. It will add approximately $50,000 a year to company payroll.

Chicago, Ill.—The three-story building at West North and Magnolia avenues, with adjoining vacant land, now occupied by the Central Rag and Waste Paper Company, has been acquired by Procter & Gamble Manufacturing Company, 1232 West North avenue, in immediate vicinity, manufacturer of soaps, etc. It will be used as a site for a new warehouse building by purchasing company. Central company will arrange for lease of other property for storage and distributing plant, removing to new location when plans have been consummated.

Lockland, Ohio—The Fox Paper Company, Locke street, manufacturer of kraft, news board and other paper stocks, has begun erection of new one-story addition to mill, about 100 x 125 feet, recently referred to in these columns, and will push construction to early completion. It will be used for storage and distributing service, and is reported to cost in excess of $40,000, including equipment. Joseph Messingschlager, 5350 Carthage avenue, Norwood, Cincinnati, has the general erection contract.

Boston, Mass.—Fire recently damaged a portion of building of Tileston & Hollingsworth Company, manufacturer of writing and other paper stocks, at 892-912 River street, Hyde Park. An official estimate of loss has not been announced, but is reported as slight. The damage will be replaced.

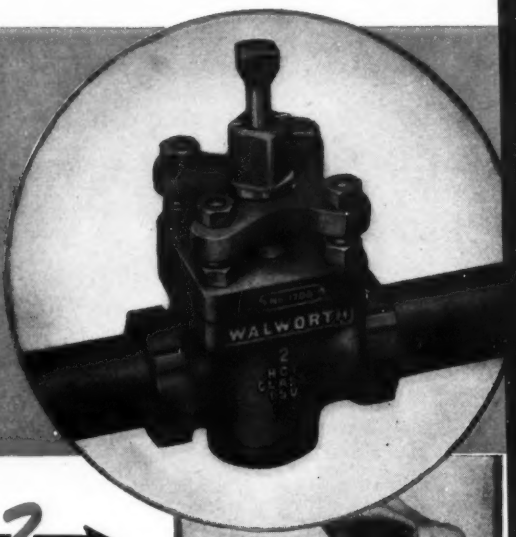
Howe Sound, B. C.—The Sorg Pulp Company, Ltd., 1500 Royal Bank Building, Vancouver, B. C., is said to be arranging early call for bids on general contract for construction of proposed new pulp mill at Howe Sound.

MAKE THEM LAST LONGER!

LUBRICATE AT REGULAR INTERVALS...

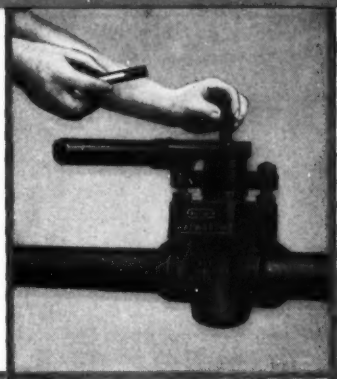
1

The conservation of metal is vital. It is essential that your valves are kept in good working condition as long as possible. A few minutes care at *regular* intervals will mean a longer useful life to your Walworth Lubricated Plug Valves. Check your valves more frequently and provide additional lubricant when necessary.



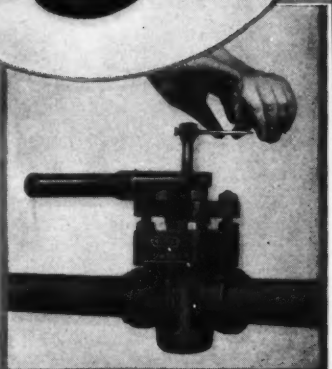
2

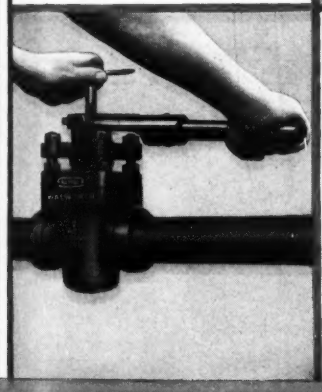
To renew the lubricant in the Walworth Lubricated Plug Valve, remove the lubricant screw. Then place a stick of lubricant in the lubricant chamber. Note:—The service determines the lubricant to be used.



3

Replace the lubricant screw and tighten it until a back pressure is felt. Add lubricant if system is not completely filled.





4

The plug should be moved back and forth slightly while lubricating the valve.

5

If the plug moves too freely the gland nuts should be screwed down evenly to keep the plug seated and prevent loss of lubricant into the pipeline. Never loosen gland nuts without first lubricating the valve.

THIS IS OUR CENTENNIAL YEAR

WALWORTH 1842 1942 VALVES AND FITTINGS 100TH. ANNIVERSARY

This year marks the 100th Anniversary of the founding of our company, and we had a nice series of "institutional" ads in mind to tell you about it. We hope you saw the first one, which appeared in the January trade publications. Needless to say, that ad was prepared before December 7, 1941, and things have happened since then.

Advertising is conceded to be the most economical means of telling a message to the greatest number of people, and in this period of Priority Production we feel that it is the duty of Walworth advertising to cooperate in a national program of Salvage, Simplification, Specification, and Substitution.

So we've scrapped the "institutional" ads we had planned for our centennial year, and present a series of ads which we think will help valve and fitting users get more service from their existing Walworth material and thereby permit the output of our five plants to be used to the best advantage for Victory in the great national effort.

WALWORTH

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

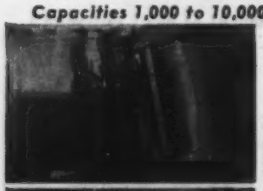
VALVES FITTINGS and TOOLS
Backed by 100 Years' Service

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

TRADE AUTOMATIC MARK
Manufacturers for Over Thirty Years
MODERN
Electric Propelled INDUSTRIAL TRUCKS
FOR ECONOMICAL MATERIALS HANDLING

- LOW AND HIGH LIFT TRUCKS
- FORK TRUCKS
- PULP AND BALE HANDLERS
- PAPER ROLL HANDLERS
- LOAD CARRIERS
- TRACTORS — CRANES

Capacities 1,000 to 10,000 Lbs.



☆ Center-Control 3000 to 6000 lb. capacity motorized revolving paper roll handlers.

Heavy-duty, center-control fork trucks—telescopic tilting, tiering type for low-cost roll storage and transportation. Capacities 3000 to 6000 lbs.

☆ Center-Control 6000 to 7000 lb. capacity heavy-duty, motorized revolving paper roll handlers.

☆ Box-car bale and roll unloader for single tier storage. 1500 to 2500 lbs.

☆ Box-cars can be loaded and unloaded in record time — with motorized roll upender. Capacities up to 3000 lbs.

☆ Chisel type pulp handlers for box-car loading, unloading and stacking.

☆ 6000 lb. capacity low-lift and high-lift trucks for skid transportation of small rolls and flat stock.

WHEN YOU BUY TRUCKS · · Buy "AUTOMATIC"
AUTOMATIC TRANSPORTATION CO.
Div. of the Yale & Towne Mfg. Co.
65 W. 87th St. CHICAGO, ILL.

Paper Demand Steady

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., March 9, 1942—Little change was seen in the paper market here last week, prices holding steady and demand being good, in fact too good in some lines where stocks are relatively short. This section continues to enlarge its efforts toward the conservation of waste paper and rags and the efforts are meeting with increasing success. Hardly a day passes but one of the local newspapers has something to say about the absolute necessity of conserving rags and waste paper and the publicity is beginning to sink in.

Fine paper demand was good last week with all items in the list moving nicely. There is some scarcity in a few items, enough at least to scare the election officials of the state who are wondering where they will get enough of the proper grade of paper for the primary ballots in the May primaries.

Demand for building paper and roofing is considerably lower than it was this time a year ago. Higher building prices coupled with a scarcity in some building materials has served to slow down the building program. Prices last week showed no change.

In spite of the fact that many items are entirely or nearly off the market due to war conditions, demand for newsprint continued good last week. Many of the retailers who have had their products frozen are turning to other items. This is notably true of the automobile industry, one of the largest single advertisers as a whole. Local publishers are not of the opinion that lineage will sink to any great extent during the first half of the year at least.

Box demand is good as is demand for heavy wrapping paper. Most of these items are being utilized by defense industries at the present time and they have priority ratings. Nondefense box users are finding it increasingly difficult to secure merchandise.

Newsprint Production

Production of newsprint in Canada during February 1942 amounted to 278,101 tons and shipments to 264,621 tons according to the News Print Service Bureau. Production in the United States was 76,234 tons and shipments 75,247 tons, making a total United States and Canadian news print production of 354,335 tons and shipments of 339,868 tons. During February, 27,330 tons of news print were made in Newfoundland, so that the North American production for the month amounted to 381,665 tons. Total production in February 1941 was 353,366 tons.

The Canadian mills produced 83,100 tons more in the first two months of 1942 than in the first two months of 1941, which was an increase of sixteen and four tenths percent. The output in the United States was 7,982 tons or four and seven tenths percent less than in the first two months of 1941, in Newfoundland production was 4,360 tons or seven and two tenths percent less, making a net increase of 70,758 tons, or nine and six tenths percent more than in the first two months of 1941.

Stocks of news print paper at the end of February were 156,957 tons at Canadian mills and 12,414 tons at United States mills, making a combined total of 169,371 tons compared with 154,904 tons on January 31, 1942, and 193,054 tons at the end of February 1941. There was some other accumulation of tonnage at points from which water shipments will later be made.

Container Case Concluded

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 16, 1942—Fines totalling $17,000 were imposed by Mr. Justic Roach in non-jury assize court this week on four companies, manufacturers of containers or container materials, and H. J. Badden, secretary.

The companies pleaded guilty to "conspiring, combining, agreeing or arranging together, to unduly prevent or lessen competition in Toronto or Montreal and other places in Canada, contrary to the criminal code, subsection (d)."

The fines imposed were: H. J. Badden, $2,000 or two months; Brompton Pulp and Paper Company, Ltd., $5,000; Gair Company Canada Ltd., $2,500; Hinde and Dauch Paper Company, Ltd., $2,500; Bathurst Power and Paper Company, $5,000.

The fines imposed concludes a case which has been before the courts since September, 1939, when a grand jury brought in a true bill of indictment. The indictment referred to a purported combining to restrict trade in paperboard.

Nineteen manufacturers of containers and container materials were found guilty September 6, 1940, at Osgoode Hall here in a prosecution brought by the crown against them for violation of section 498 of the Canadian Criminal Code by combining in restraint of trade. The firms who were found guilty of combining in restraint of trade at that time in a judgment issued by Mr. Justice J. A. Hope, of the Supreme Court of Ontario, were fined amounts of $2,500 to $10,000. The case had been before the courts for some time and the accused companies included Container Materials, Ltd. and H. J. Badden; Gair Company of Canada Ltd. and Hinde and Dauch Paper Company Canada Ltd. Neither Brompton Pulp and Paper Company, Ltd., nor Bathurst Power and Paper Company were included among those against whom the September 1940, prosecution was brought.

Now Beaver Cove Timber Co.

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., March 7, 1942—Sequel to the multi-million-dollar deal for Vancouver Island timber closed a few months ago, Wood & English Ltd., pioneer logging organization, has changed its name to Beaver Cove Timber Company, and has moved its offices to the 15th floor of the Standard Bank Building, Vancouver, B. C.

The Beaver Cove Timber Company now ranks as a subsidiary of the company created when Puget Sound Pulp and Timber Company of Bellingham negotiated the purchase of Canadian Forest Products Ltd., Wood & English and other timber in the Nimpkish River valley of Vancouver Island.

Preliminary operations are now under way to extend road and railway into the timber and to rehabilitate equipment for production. Several hundred men are now on the ground, but logs will not be taken out for several months.

When in full operation, the combined companies will represent one of the biggest log-producing organizations in the Pacific Northwest. Ossian Anderson is president, with Fred B. Brown, vice-president in charge of operations, assisted by F. W. Kirkland and K. B. Fraser.

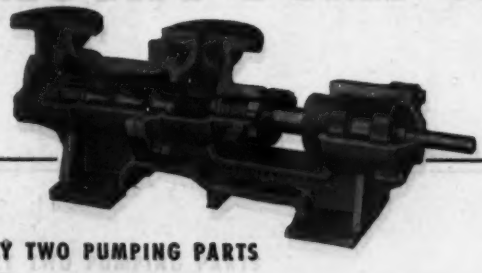
"Increasing Production... Improving Quality!"

say R & M MOYNO PUMP users

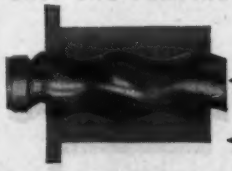
FOR *years* R & M Moyno Pumps have helped leading paper mills *speed production* by eliminating "pumping trouble" delays — at the same time improving product quality, saving money, time and costly maintenance.

You should be *doubly* interested in these performance records *now*—with demand zooming the way it is!

Investigate the R & M Moyno! Put it to work on your *toughest* pumping job. It's radically different—yet so *simple* in principle. Handles size, coating or stock without foaming, turbulence or cavitation—provides uniform, metered delivery over a wide range of liquid viscosities. *Write today* for Folder 1777.



ONLY TWO PUMPING PARTS



Here's the patented secret of the efficient, trouble-free performance of the R & M Moyno Pump. A helical rotor revolves within a helical-threaded stator, providing pumping action like that of a piston moving through a cylinder of infinite length. Construction of the Moyno Pump is so simple that it can be dismantled and reassembled in 30 minutes.

ROBBINS & MYERS • Inc.

MOYNO PUMP DIVISION SPRINGFIELD, OHIO

HOISTS • CRANES • MOTORS • FANS • FOUNDED 1878

U. S. Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 18—The Government Printing Office has received the following bids for 36,600 pounds of 50% rag, 28 x 34 white bond paper; Walker, Goulard Plehn Company, 15.95 cents; Mudge Paper Company, 15.86 cents; R. P. Andrews Paper Company, 15.2 cents; and Whiting Paper Company, 16.5 cents.

For 329,000 pounds of 42 x 62 white offset paper; Frank Parsons Paper Company, 7.29 cents; R. P. Andrews Paper Company, 7.44 cents; Whitaker Paper Company, 7.34 cents; Butler Company, 7.78 cents (50,000 pounds only); Marquette Paper Company, 7.3 cents; Paper Corp. of U. S., 7.57 cents; Stanford Paper Company, 7.8 cents; Mudge Paper Company, 7.22 cents; and Bulkley Dunton & Company, 7.03 cents.

For 591,000 pounds of 38 x 48½ white mimeograph paper; Coy, Hunt & Company, 6.9 cents; Whitaker Paper Company, 6.91 cents; R. P. Andrews Paper Company, 6.58 cents; Cauthorne Paper Company, 6.7 cents; Marquette Paper Company, 5.1 cents; Frank Parsons Paper Company, 5.19 cents; and D. L. Ward & Company, 5.19 cents.

For 172,500 pounds of 32 x 42 white sulphite writing paper; Whitaker Paper Company, 7.04 cents; Eastern Corp. 7.06 and 7.26 cents; R. P. Andrews Paper Company, 6.98 cents; and D. L. Ward & Co., 7.5 cents.

For 34,240 pounds of 34 x 55 yellow sulphite writing paper; Eastern Corp., 8 cents; Paper Corp. of U. S., 10.65 cents; Marquette Paper Company, 8.25 cents; and Walker, Goulard Plehn Company, Inc., 8.15 cents.

For 22,680 pounds of 34 x 44 white sulphite manifold paper; Coy, Hunt & Company, 12 cents; North American Pulp & Paper Company, 12 cents; Walker, Goulard Plehn Company, 11.94 cents; Whitaker Paper Company, 11.87 cents; Old Dominion Paper Company, 11.987 cents; Graham Paper Company, 9.6 cents; Enterprise Paper Company, 12.59 cents; Stanford Paper Company, 9.87 cents; Marquette Paper Company, 9.5 cents; Mathers-Lamm Paper Company, 11.99 cents; and Paper Corp. of U. S., 11.5 cents.

For 150,000 pounds of white sulphite writing paper in 24 inch rolls; Brander Smith & Company, 6.75 cents; Stanford Paper Company, 7 cents; Eastern Corp., 7.01 cents; R. P. Andrews Paper Company, 6.48 cents; Whitaker Paper Company, 6.69 cents; and Frank Parsons Paper Company, 7.25 cents.

For 39,000 pounds of 50% rag, 32 x 42 white manifold paper; Walker, Goulard Plehn Company, 21.43 cents; Old Dominion Paper Company, 25.97 cents; Barton, Duer & Koch Paper Company, 20.325 cents; Paper Corp. of U. S., 21 cents; and Brander Smith & Co., 20.85 cents.

Not Buying Swedish Pulp

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 11, 1942—During last October negotiations were pursued between the Swedes and Germans for the shipment of 20,000 metric tons of sulphate wood pulp but the deal was not concluded as the Swedish and German negotiators failed to agree on the price which the Swedish mills wanted, according to a report to the Department of Commerce.

The refusal of the Germans to consider a higher price was surprising as Germany had purchased sulphate pulp a short time before from Finland at appreciably higher quotations. Aside from this no further German purchases of sulphite wood pulp for paper manufacture or of mechanical pulp is expected in the near future.

New contracts with France for sulphite and sulphate pulps, about which negotiations have been conducted for some time and which were reasonably certain to be closed, have not materialized. It now appears, the report states, that the French overestimated their ability to make payment and there is little prospect of further business in Sweden, even for barter transactions.

Felt Converting Plant

The Bloomfield Woolen Company, Bloomfield, Ind., operator of one of the largest plants in the country for washing and cleaning paper mill felts, is shipping about 500 blankets a week, made from paper mill felts donated by the National Paperboard Association, to the British War Relief. In addition to buying felts outright for blankets and other uses, this company also converts felts for paper mills. It is completely equipped for washing, drying and dyeing felts of all sizes. R. A. Cross is president and William A. Ramey, general manager of the firm which numbers many of the largest mills among its satisfied customers.

Today you can't afford "down time" to repair or replace improperly designed and installed linings. Never was it more important to remember: "SEMCO" quality — is real economy.

SEMCO

Stebbins Engineering and Manufacturing Company

370 EASTERN BLVD. WATERTOWN, N. Y.

Get Increased Insurance

Increased security for employees of the Missisquoi Corporation, pulp and paper manufacturer, of Sheldon Springs, Vt., has been established through the inclusion of hospital expense and surgical operation benefits in the corporation's group insurance program. Since 1927, the plan has provided the workers with life insurance, now totaling $296,000, supplemented by sickness and accident benefits.

The plan is being underwritten by the Metropolitan Life Insurance Company on a cooperative basis whereby the employees contribute fixed amounts and the employer bears the balance of the entire net cost.

Individual benefits range for life insurance from $1,000 to $2,500, while amounts of from $10 to $25 a week will be paid in case of sickness or non-occupational injury. Benefits payable in case of an employee's hospitalization range from $3 a day to $6 a day. Workers whose dependents are covered for hospitalization receive from $3 a day to $5 a day in the event of a dependent's confinement. In both instances the benefits will be paid for a maximum period of 31 days. Surgical operation benefits range up to $150. The plan also includes the distribution of pamphlets on health conservation and disease prevention.

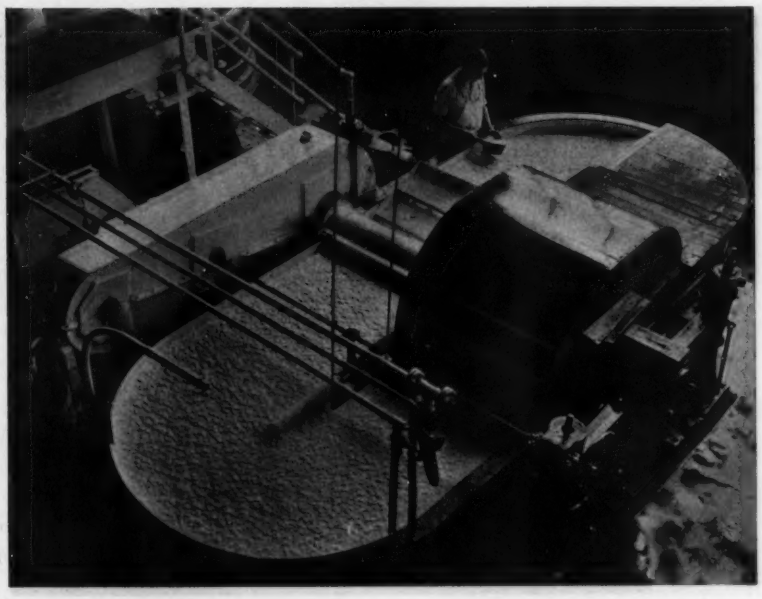
New Box Specifications

WASHINGTON, D. C., March 18, 1942—The Containers Branch of the War Production Board has requested manufacturers of folding and set-up boxes to revise specifications for certain boxes in order to reduce consumption of paper board.

The requested revisions include reductions in density and finish in the box board used in various types of boxes, and a standardization in design and elimination of some sizes.

The suggested changes in specifications relate particularly to boxes for baked goods, cereals, confectionery, cosmetics, crackers, dairy products, hardware products, medicinal products, retailers' boxes, soap, sporting goods, textile goods, tobacco and related products, and toys.

William W. Fitzhugh, Chief of the Folding and Set-up Box Section of the Containers Branch, explained in a letter to manufacturers that many of the suggested specifications are already being practiced by some members of the industry, but that the Section desired that all manufacturers become familiar with them.



Consistency of the stuff in a beater runs about 6½%; it is reduced at the head box to around 1½%. In order to make one ton of paper 1900 pounds of water must be dispersed.

The removal of a large part of this water UNIFORMLY is the job of the felt. The correct design of felts for your specific requirements will ensure maximum production with optimum quality.

Draper Felts **are meeting the most exacting conditions on all types of paper machines. A trial will convince you.**

Draper Felts Favor Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856 CANTON, MASS.

OUR REPRESENTATIVES to serve you

L. H. BREYFOGLE, Kalamazoo, Mich.
C. K. BEECHER, Delaware, Ohio
W. L. CAMPBELL, Savannah, Ga.
O. J. LELOFF, Vancouver, Wash.
RALPH E. BRIGGS, Canton, Mass.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 114 March 19, 1942 No. 12

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

WAR PRODUCTION

War production on the extensive scale demanded by and considered essential by the Administration, is the biggest project this country has ever undertaken. It virtually impounds the total resources of the country. The requirements of war, not for this country alone, but for all the nations resisting aggression, will in greatest part be supplied by us. To meet this huge commitment as the "arsenal of Democracy", the United States must produce as it has never done before; it must pay the heaviest taxes in its history, and it must sacrifice the high standards of living which has continued steadily upward since the country became the United States of America.

A clear presentment of the aims and essential requirements of the War Production Board were briefly outlined by Donald M. Nelson, chairman of the War Production Board, on the Mutual Broadcasting System, Tuesday March 10. "There are two ways to get production", Mr. Nelson said, "The first is for Government, meaning especially the Army, the Navy, the Maritime Commission and the War Production Board, to provide the blueprints of what is wanted; the schedules for when it is wanted; to see that adequate facilities are available for production; to see that the materials are available for those machines and then have management and labor bend every conceivable effort to achieve maximum production quickly. That is the way I want to see it done. That is the way the public would like to see it done. That is the American way. That is, in effect, what we are fighting to maintain in this country. There can be no one within sound of my voice but who agrees, if he thinks about it at all. But, do we really understand what it means in terms of alternatives? Remember, I am saying the public wants production, not only wants, but is demanding production."

In pointing out the methods of obtaining production, Mr. Nelson said: "It is my considered opinion that the public will not waver in its determination, and, as I said a moment ago, it will get production one way or another. There is, however, but one other way than the one we follow now. That is the way of of our enemies. That is the way of bondage; of force, the way of the totalitarian state. That is also the way to the destruction of everything we have fought for and worked to maintain and cultivate from the day this nation was founded. But our enemies are using this method and, as I said last week, they have brought production to a high peak. We face the absolute necessity of matching that production and surpassing it. We are today face to face with an enemy determined to destroy us. . . . We have got to have more and more, and ever more and more planes, tanks, ships and guns to carry the fight directly to the enemy and annihilate him. I believe the necessity for having those weapons now transcends all other matters in the public mind, either political or economic. . . . But now, let's look at our tool box. Are the tools laid away in grease or are they hot in the hands of men who know how to use them? Right now we've got some in the box and some in the hand. I'll put it this way: If all our equipment now involved in war production were used 24 hours a day, seven days a week, we would practically double the man-hours being put into military production."

Emphasizing the urgency of speeding up production Mr. Nelson said in part: "When I say we can increase production substantially by greater use of existing machinery, I am thinking of the 20% of war plants operating only 5 or 5½ days a week. I am thinking of the many plants closed Sundays. I have in mind the second shifts using only 40% of plant capacity and the third shifts using only 20%. This, as you can readily understand, means that thousands of machines needed for war production now stand idle part or all of every weekend and from 9 to 16 hours every weekday. And, I might add, idle tools work for Hitler. Let me be even more specific because I want all of you to understand just what we face, even though I risk confusing you with figures. There are, for example, 31 aircraft engine and propeller plants. If the facilities of all were utilized to the same extent as the three with the best records, we could increase production immediately in these plants by at least 25%. Take the 153 plants manufacturing machine tools. If all were operating at the same level of utilization as the top three, we could increase machine tool output 45% immediately."

Continuing, Mr. Nelson said: "I can hear you saying: 'Well, you're chairman of the War Production Board. What are you doing about it?' In brief, my answer is, we are doing something about it. The Production Drive we are now starting is one step. Another involves the reorganized, hard-hitting pro-

curement setup of the Army, the Navy and the Maritime Commission integrated into a unified supply system with the War Production Board. . . . You can't get this maximum production by pressing a button or by giving an order merely by making speeches. There are many problems to be solved . . . there is reluctance to increase the number of shifts; in other cases there is a faulty flow of materials; in others, there is what you might describe as a lack of imagination in seeing how production can be increased with the equipment at hand; there are questions of time and one-half and double-time for holidays and Sundays; there are problems of training new men; there are changes in designs; there are shortages of certain specialized facilities and finally there is the absolute necessity of providing materials and machines for our allies."

Emphasizing the gravity of the situation, Mr. Nelson said in reference to labor and management that, "We, and you, are on trial today before the American public. . . . We have but little time. That time has been bought at the price of American boys fighting on lonely islands, in steaming jungles; by American boys aboard storm-tossed warships warding off the death that strikes from the clouds and from beneath the waves; by American boys fighting in the best warplanes in the world, planes of which we must make more and more fast. If through selfishness, inertia, indifference or any other cause we let them down, then the American people will damn us forever more."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1942		Corresponding Weeks, 1941	
January 31	103.9	February 1	86.4
February 7	104.1	February 8	88.6
February 14	103.1	February 15	89.3
February 21	103.1	February 22	90.4
February 28	103.5	March 1	90.5
March 7 (Prelim.)	*102.3*	March 8	91.0

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2
1942	103.8	*103.6*	...	...	...	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1941	101.0	99.7	105.2	106.2	100.4	97.4
1941	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year to Date..	66.8	76.5	89.2	66.1	78.5	87.1	87.8	*103.5*
Year Average..	69.9	80.4	79.8	71.5	83.4	85.6	97.4	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg. Year
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	88	86	94	94	99	98	93	88
1942	102	*101*	..	..	..	..	..	..	..	..	..	..	..

Week ending Jan. 31, 1942—101 Week ending Feb. 21, 1942—102
Week ending Feb. 7, 1942—101 Week ending Feb. 28, 1942—100
Week ending Feb. 14, 1942—101 Week ending Mar. 7, 1942—*101*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

CONTINENTAL—A QUALITY NAME IN CARBON BLACK

Among the largest and most critical users of Carbon Black, Continental is a favored name. For Continental has systematized its control of production down to the smallest detail. For example, not content with the traditional methods of controlling the flow of air in the burner houses, where the black is produced, Continental has developed special methods which assure a more uniform product of higher quality. In other operations, such as handling, conveying and packing, the company has succeeded in making similar improvements.

If you use Carbon Black you can benefit by knowledge of this manufacturing control. It will give you more confidence in obtaining the exact results you are seeking. You can be sure that the black you are using is made by the most modern methods under the supervision of a personnel especially trained in the manufacture of this one product.

And you will know that if you need expert technical assistance in the use of Carbon Black for your special processes, you can get it in full measure at Continental. Our staff will gladly help you select the type best suited to your needs.

2 TYPES TO CHOOSE FROM

UNCOMPRESSED BLACK

Continental Uncompressed Black meets the most stringent requirements for ease of dispersion and intensity of coloring. Accepted throughout the paper industry, you can depend upon it to be of the highest quality—and consistently uniform.

CONTINENTAL P

This special new Continental Pellet Black offers advantages in cleanliness, ease of handling, and because of its extra soft structure, assures good dispersion and retention. Continental P Black is lower in cost and is being used with satisfactory results.

Continental CARBON BLACK

CONTINENTAL CARBON COMPANY, 295 Madison Ave., New York, N. Y.
Akron Sales Office: Peoples Bank Bldg., Akron, Ohio
SALES REPRESENTATIVES: Ernest Inesby & Co., Boston, Mass. • Marshall Hill, Los Angeles and San Francisco, Cal.

Wax Emulsions

TO REPLACE DRY WAX

on paper and paper boards

FIVE IMPORTANT ADVANTAGES... Paper machine treatments with wax emulsions may sometimes be used to advantage to replace dry waxing. It is granted that a film applied by this means is not comparable to a heavy coating of dry wax, but there are cases where heavy coats are not required or desired. The advantages of the use of emulsions versus dry waxing are as follows:

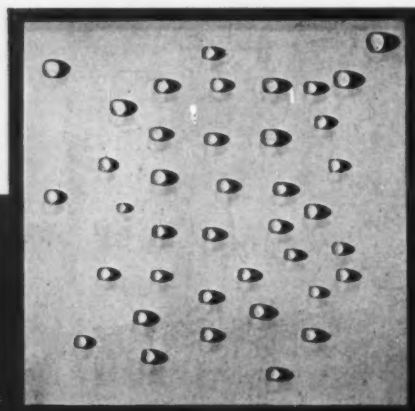
1. Wax may be applied at the paper machine, thus eliminating an extra operation.
2. The paper is not discolored as in the case of dry waxing.
3. Penetration of the wax into the sheet is better controlled.
4. Water soluble modifying ingredients may be used with the wax.
5. Application of wax emulsions does less injury to resistance to hot aqueous liquids than dry waxing.

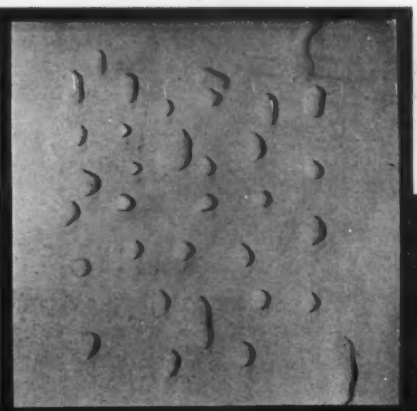
Effects secured by paper machine applications of wax emulsions are capable of wide modification. When wax is suspended in water, its absorption by paper is affected mainly by the water resistance of the paper which is more easily adjusted than resistance to absorption of molten wax. The degree of slipperiness of the sheet may also be controlled to a certain extent. Special emulsions have been developed by Cyanamid to do different jobs and others are in the development stage.

SIX IMPORTANT RESULTS... A number of effects may be secured by treating paper and paper board with wax emulsions. The more important ones are listed below:

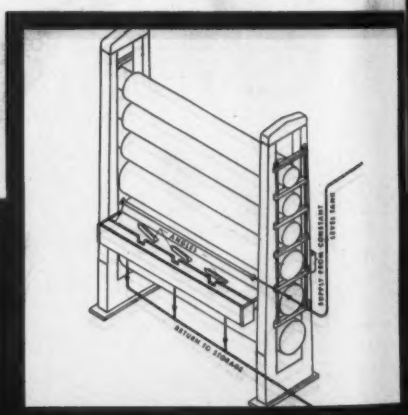
1. Smooth finish.
2. Increased resistance to scuffing and abrasion.
3. Lowered coefficient of friction.
4. A water repellent effect.
5. Increased resistance to the penetration of water.
6. Resistance to absorption of organic liquids, such as printing inks and varnishes.

Cyanamid Technical Service Representatives are experienced in the application of these products to secure the different effects and will be glad to discuss general and specific problems in this connection, with you.





Unretouched photographs showing, *(upper left)* "duck's-back" effect of paper treated with Alwax size compared with paper, *(upper right)* that has not been treated with this material.



Design of water box that is very satisfactory for the application of chemicals to paper boards at the calender. Enlarged detailed drawing on request.

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Chemical Testing Methods Literature Review*

By B. L. Browning[1]

This review covers the field of chemical analysis of wood, pulp, and paper since the previous annual review*(1)*. Papers on the determination of lignin*(2-5)* and of cellulose*(6, 7)* have been reviewed by Lauer*(8)* of the TAPPI Fibrous Raw Materials Testing Committee. Hannerz*(9)* has made suggestions for obtaining more reproducible results in crude fiber determinations.

Améen and Karlsson*(10)* described a modified Vieweg method for alpha-cellulose, and discussed the relation of analytical values to conditions of rayon manufacture. They recommended an oxidation procedure using dichromate. A modified pentosan method using hydrobromic instead of hydrochloric acid for production of furfural by distillation was described by Jayme and Sarten*(11)*, who claimed a theoretical recovery of furfural from xylose and arabinose. Hallsworth*(12)* studied the evolution of furfural during distillation by application of the excess bromine method. The determination of methylpentoses in the presence of pentoses by oxidation with periodic acid to acetaldehyde and formaldehyde, respectively, has been described by Nicolet and Shinn*(13)*.

Considerable interest in measurement of viscosity of cellulose solutions has been evinced during the year. Rich*(14, 15)* has developed a simplified rapid method for measurement of cuprammonium viscosity of pulp and paper, suitable for control through the bleaching and papermaking processes. Measurement is made by the falling ball principle. Berl*(16)* has made a careful study of a number of factors influencing the viscosity determinations of cellulose. These include the composition of the compounds present in solution, the effect of oxidation, and a quick method for measuring the viscosity of nitrated cellulose. Friedman and Dana*(17)* have reviewed the methods used, the nature of cellulose dispersions, and application of methods in the viscosity test. The nonideal character of cellulose solutions has been carefully considered by Conrad*(18)*. He found that the velocity gradient is an important factor in the measurement. He suggested measurement of the viscosity at several velocity gradients and interpolation to a mean velocity gradient in determining the cuprammonium viscosity of cellulose. The solubility of cellulose in trimethylbenzyl- and dimethyldibenzylammonium hydroxides (Tritons B and F) and the viscosities of the resulting solution have been studied by Brownsett and Clibbens*(19)*.

Bartholomew and Norman*(20)* described an improved apparatus for determination of uronic acids in soils and plant materials. Wurz and Swoboda*(21)* presented improved apparatus for the determination of uronic acids in pulps. A micromethod and apparatus for determinations of uronic acids was described by Freudenberg, Gudjons, and Dumpert*(22)*. Harris and his associates*(23)* have continued their previous excellent work on the acidic character of cotton development of a method involving titration with alkali. Rebek*(24)* found that the carboxyl groups of cellulose, upon treatment with the colorless pseudobase Crystal violet, develop the dye which is fixed by the fiber. Harris and coworkers*(25)* have studied the determination of reducing groups in cellulose by titration with iodine in alkaline solution, and have presented an improved method. Christensen, Friedman, and Sato*(26)* have studied the effect of impurities in reagents used for the methoxyl determination, and described a modified Pregl apparatus.

In determination of lignin in pulp by the 72% sulphuric acid method, Simmons*(27)* recommended a two-hour alcohol-benzene preextraction and omission of the hot water preextraction. Fuller*(28)* studied the variables in the permanganate number method, suggested a modified method, and gave correlations with other bleachability methods, lignin content, and burst of test sheets. Knight and Browning*(29)* studied a number of bleachability methods and suggested the possibility of improved correlation between methods by taking into account the pulp brightness attained in the test.

Tydén*(30)* determined sulphur in pulp by treatment with nitric acid, using vanadium pentoxide as a catalyst. Larson*(31)* described an improved method for determining chlorine and sulphur in a single pulp sample after treatment with nitric acid. The chlorine was determined by titration, the sulphur after precipitation as barium sulphate. Johansson*(32)* described wood and pulp methods standardized in Sweden. A summary of quick control methods for cooking de-

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y. Feb. 16-19, 1942.

[1] Member TAPPI; Chairman, TAPPI Chemical Methods Coordination Committee; Institute of Paper Chemistry, Appleton, Wis.

gree, alpha-cellulose, wood gum, and viscosity were given by Klauditz*(33)*.

Relatively few articles on paper analysis have appeared during the year. Ohlwiler*(34)* determined the tarnishing action of paper by evolving hydrogen sulphide from the paper and absorbing it as a spot on impregnated test paper. Burgstaller*(35)* considered tests for suitability of paper as a glass wrapping. Particles which might scratch glass, and the defect known as "bloom" are important. The possibility of the latter can be determined only by practical storage tests. A discussion of pH methods, their importance, and expression of pH values of papers has been presented by Kantrowitz and Simmons*(36)*. TAPPI Standard T 440 m (alkali-staining property of paper) has been revised*(37)*.

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TAPPI Discusses Electrical Precipitation

The Lake States Section of the Technical Association of the Pulp and Paper Industry held its regular monthly meeting on Tuesday, March 10, at the Conway Hotel, Appleton, Wisconsin. W. H. Blessing of the Research Corporation, Chicago, Ill., presented a paper on "Electrical Precipitation." The purpose of this paper was to discuss essentially the work which has been done on the application of the Cottrell electrical precipitation equipment to the collection of alkali losses from recovery furnace gases in sulphate pulp mills. It outlined the various factors involved in this application and discussed, particularly, the method of handling these gases at temperatures above the dew point in order to collect the alkalies in the form of a dry powder. Descriptions of the test and pilot plant installations were given together with the operating data and conclusions reached on each. Descriptions of commercial installations, together with the operating results obtained at each location, were presented.

Those present included Emeran Ahles, Kenneth Arnold, Arnold Beaman, W. H. Blessing, Peter B. Borlew, Bill Burger, Glenn Corvall, James B. Clarke, James d'A Clark, Arthur A. Coffin, H. C. Crandall, M. N. Davis, Roy L. Davis, Dave De Zurik, R. A. Diehm, H. P. Dixson, G. F. Enderlein, H. V. Frederick, John P. Gerhauser, John Graff, John A. Hanson, W. F. Holzer, E. C. Jacobi, Roy P. Kirkside, Otto Kress, Stephen Kukolich, M. A. Lefevre, A. Lewenstein, N. L. Malcove, L. A. Moss, Thos. E. Orbison, R. L. Osburn, S. R. Parsons, T. A. Pascoe, P. A. Paulson, F. G. Pavlick, L. B. Penhallow, A. Phillips, M. Phillips, Wm. J. Plank, D. C. Porter, T. R. Probst, Henry C. Rader, R. M. Radsch, E. W. Rasmussen, H. A. Rothchild, L. E. Russell, T. J. Russell, J. Richter Salvesen, Fred. W. Sanders, G. R. Sears, W. L. Shaw, R. A. Stillings, W. H. Swanson, I. R. Valentine, Jr., Martin H. Van DeLaarschot, J. A. Van den Akker, Lambert Van Roy, Edward H. Voigtman, H. L. Voss, Darwin Wamsley, John P. Weidner, S. D. Wells, J. C. Wollmage, and Lowell W. Zabel.

Kalamazoo TAPPI Discusses Dyes

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry met at the Park-American Hotel, Kalamazoo, Mich., on March 5, 1942. Fred L. Chappell Jr. of the Sutherland Paper Company presided as chairman.

R. A. Hayward, President of TAPPI and the Kalamazoo Vegetable Parchment Company talked on the growth and organization of the Technical Association and outlined its functions and policies.

Ivar Ekholm of the National Aniline Division, Allied Chemical & Dye Corporation, led a discussion of local paper coloring problems based on questions submitted by members of the Section.

The next meeting of the Section will be held at the Park-American Hotel on April 2. George Sears of the Institute of Paper Chemistry, Appleton, Wis., will give an illustrated lecture on the electron microscope and its use in the pulp and paper industry.

Paper Salvage Plan Broadening

The Appleton, Wis., plan of collecting waste paper, developed at the request of the Government, is being adopted in many places. John Strange, secretary of the salvage board at Appleton, says requests for copies of the plan have been received from numerous cities in the United States and Canada, and one request has come from England.

Since put in operation December 6, the plan has salvaged 100 tons of paper which formerly went to waste. Both the American Pulp and Paper Association and the Canadian Pulp and Paper Association have given study to the plan and are planning to send it to member organizations.

Application of the Electron Microscope to Problems of the Pulp, Paper, and Paperboard Industry*

By George R. Sears[1] and Evelyn A. Kregel[1]

Electron microscopes have been well publicized during the past two years. The figures which represent the magnifications they make available have sounded somewhat astronomical and, coupled with the intriguing possibility of seeing some of the hitherto invisible, have lent themselves well to the enthusiastic treatment of feature writers. Happily, the subject warrants the enthusiasm, for electron microscopy is making valuable contributions in practical industrial problems as well as in purely scientific fields. Electron microscopes have been described and reviews of their applications have been presented in a number of publications *(1-8)*.

Papermaking involves the interaction of surfaces and the manipulation and control of those surfaces. For example, fiber surfaces are important in the felting of fibers to form a sheet; beating and other stock treatments change the surface of fibers; and the interactions of surfaces are of importance in dyeing, sizing, filling, and coating. A number of papermaking materials and many of their interesting interactions cannot be seen in the ordinary optical microscope. Hence, the advent of the electron microscope, with its power of making visible structures that are one-fiftieth the size of the smallest that can be seen in the ordinary microscope, is a matter of more than passing interest to the pulp, paper, and paperboard industry.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] The Institute of Paper Chemistry, Appleton, Wis.

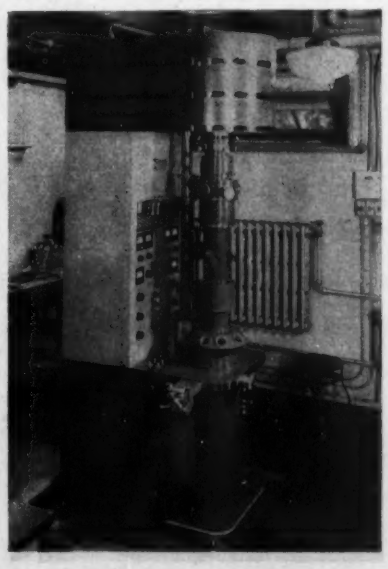


FIG. 1
R. C. A. Electron Microscope

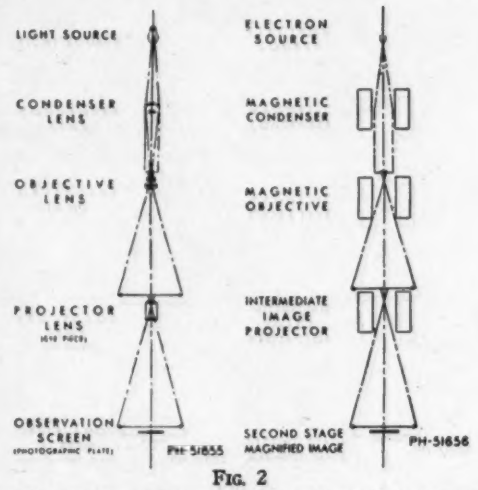


FIG. 2
Schematic Analogy between Electron and Optical Microscopes (Courtesy R.C.A.)

The following discussion includes a brief discription of the R.C.A. electron microscope, consideration of the characteristics of specimens suitable for examination in the microscope, a synopsis of methods of preparing specimens for observation, and a survey of some applications of electron microscopy to materials of interest to the pulp, paper and paperboard industry.

Analogy of Optical and Electron Microscopes

The R.C.A. electron microscope is shown in Fig. 1. Before proceeding with a description of the instrument it is appropriate to point out that an instructive analogy exists between the "optical" systems of the ordinary and electron microscopes. Figure 2 schematically illustrates this analogy. Corresponding to the light source for the optical microscope there is a source of electrons, called an electron gun, for the electron microscope. The beam of electrons from the gun is concentrated on the specimen by a magnetic condenser as the light is concentrated on the specimen by the condenser lens. The electrons which pass through or past the specimen are focused by a magnetic objective to form an image of the specimen corresponding to the image formed by the objective lens of the optical microscope. A portion of this image is magnified and projected by a magnetic projector onto a fluorescent screen for visual observation or onto a photographic plate for permanent recording. A corresponding magnification and projection onto the ground-glass or photographic plate is effected by

the projection lens of ordinary photomicrographic equipment.

However, there is an important difference in the optical systems of the two microscopes in that the electron beam must travel through evacuated space throughout its path, except for the short distance it travels through the necessarily thin specimen. The evacuation of the microscope is necessary in order that the beam of electrons not be diffused and scattered by collisions between electrons and gas molecules. The presence of air in the electron microscope would correspond roughly to the presence of dust-filled air in the optical path of the light microscope.

Further analogies and differences between the optical and electron microscopes will appear in the following discussion.

Description of the Electron Microscope

The electron microscope is upside down compared to the optical microscope in so far as the electron beam travels from top to bottom instead of upward as does light in the ordinary microscope. The electron gun cannot be seen in Fig. 1 as it is at the top of the column and is surrounded by a lead-lined housing which stops any X rays excited by electron bombardment of the metal parts of the gun. The electrons are emitted from a hot tungsten filament and are accelerated by the high voltage applied between the filament and a metal cup which forms the anode of the gun. Electrons pass through an aperture in this anode cup and down the column. The "lenses" are symmetrically wound coils through which electric currents are passed to produce the required magnetic fields. The rapidly moving electrons are deflected as they move through the magnetic fields of these coils and their associated pole pieces in a manner which may be considered analogous to that in which rays of light are bent as they pass through a lens. These magnetic lenses have a convenient property in that their focal lengths depend on the current which is passed through them so that the focus and magnification are changed, not by moving or changing lenses, but by the simple operation of turning a rheostat which controls the current through the appropriate coil.

The specimen is mounted by methods to be described later on a ⅛-inch disk of 200-mesh metal screen and is placed just above the pole piece of the objective. The disk is so mounted that it may be moved about as the specimen is examined. An image of the specimen is formed by the objective on a fluorescent screen. Ports are provided so that the image on the screen may be viewed and the specimen examined under this magnification of about 150-fold. The specimen is moved until the image of the portion which it is desired to magnify further falls on a small aperture in the center of the fluorescent screen. The part of the electron beam which passes through this aperture enters the field of the projector and the final image is formed on a large fluorescent screen at the bottom of the column. Viewing ports are provided for the examination of this image; by lifting the screen the image is allowed to fall on a photographic plate. The bombarding electrons "expose" the plate as would a beam of light. Satisfactory exposures can ordinarily be made in about ten seconds. From three to eighteen exposures may be made on a single plate depending upon the desired size of the images. Both the specimen and the camera chambers may be shut off from the rest of the microscope column, so that the specimen or plate may be changed without letting air into the entire microscope. The chambers are evacuated with an auxiliary pump before reconnection to the main vacuum system.

Resolving Power and Magnification

The advance in microscopy brought about by the introduction of the electron microscope lies in the improved resolving power of the electron compared with the optical microscope. The resolving power is the smallest separation of two points in the specimen which can be distinguished as two points in the image. The resolving power of the optical microscope depends on the wavelength of the light used, as well as upon the index of refraction of the material in the lenses and upon the aperture of the lenses. The resolving power is improved as the wavelength of the light is decreased—hence, the use of ultraviolet light and special quartz and fluorite lenses in applications demanding extreme resolving power. The wavelength associated with the electron beam of the electron microscope is extremely short compared with the wavelength of the visible or ultraviolet light used in ordinary microscopy. For example, electrons accelerated by 60,000 volts have a wavelength of only 0.005 mμ compared with a wavelength of 400 mμ for the shortest wavelengths of the visible spectrum or 275 mμ for the light used in ultraviolet microscopy. The wavelength of the electron beam decreases as the accelerating voltage is increased. Full advantage cannot be taken of this extremely short wavelength in the electron microscope because the magnetic lenses fall far short of the perfection of optical lenses. However, the resolving power is sufficiently improved to make possible the separation of points in the specimen which are only one-thirtieth as far apart as closest points which can be resolved by the ultraviolet microscope and only one-fiftieth as far apart as the closest points that can be separated by a microscope using visible light. This factor of fifty is important for it extends the range of visibility into a region heretofore inaccessible and, therefore, not only of interest to the curious but undoubtedly of application to practical problems, including those of the papermaker.

This brief discussion of resolving power is presented as a basis for distinguishing between magnification in general and maximum useful magnification. Every photographer who makes enlargements of his negatives has found that there is a point beyond which it is not worthwhile to enlarge even the sharpest negative. Enlargement beyond this point increases the over-all size of the image but does not make visible additional fine detail—in fact, the photograph appears undesirably fuzzy. Likewise, photomicrographs are usually limited to a magnification of one thousand, not because microscopists lack the initiative to make greater enlargements, but because no additional information is gained by so doing. This limit is imposed by the resolving power of the optical system of the microscope. If the microscope could separate points in the object which are closer together than those it now separates, greater magnifications would be useful. It is here that the better resolving power of the electron microscope comes in. Useful magnifications of 50,000 to 100,000 may be obtained. The maximum magnification in the microscope itself is about 25,000 but

the negatives have sufficient fine detail to warrant subsequent enlargement to yield the magnifications quoted above.

Characteristics of Suitable Specimens

As is the case in ordinary microscopy, no definite upper limit can be set for the permissible thickness of specimens for electron microscopic examination. However, it has been found rather generally that no internal structure or differences in density can be distinguished in a specimen thicker than one micron (0.001 mm.) when the maximum accelerating voltage of the microscope is 60,000 volts, as it is in the R.C.A. instrument. The "transparency" of a specimen to a particular electron beam depends upon its thickness and upon the atomic weight of the constitutive atoms rather than upon the molecular weight of the material. The transparency increases as the thickness of the specimen and the atomic weight of the constitutive atoms decrease. The sharpest images of internal structures are generally obtained for a specimen less than 0.01μ thick and the images become progressively more diffuse as the thickness increases. This lack of sharpness in the images of thick specimens is due to the fact that too large a proportion of the electrons are slowed down in passage through the specimen. The optical system of the electron microscope demands that the beam contain electrons of the same and constant speed. These restrictions on the thickness of the specimen apply only when the internal structure of the specimen is of interest. If only the outline or silhouette of the object is of interest, much thicker specimens may be used.

The restrictions on the length and width of the specimen are less severe but more definite. The field of view in the microscope is circular and less than 15μ in diameter; hence the length of the longest object which can be viewed in its entirety is somewhat less than 15μ. The specimen may be moved about and viewed piecemeal over lengths as great as about one-fiftieth of an inch. The maximum permissible dimension of any specimen is about 1/16 inch and is fixed by the design of the specimen holder.

The previously described need for evacuation of the microscope obviously limits the specimens to those which withstand such evacuation.

The materials which meet these requirements for satisfactory observation are many and varied. Among them are: films of plastics, resins, and other high molecular weight materials, clays, fillers, pigments, smokes, fumes, emulsions, nearly all finely divided powders, biological structures, and many fibers.

Preparation of Specimens

Because of the extreme thinness and general fineness of specimens suitable for examination in the electron microscope, the technique of mounting and supporting the specimens is quite different from the ordinary microscopic technique. Ideally, the specimen should be self-supporting so that the electron beam need pass through nothing but the specimen. However, most specimens must be supported on a homogeneous film which shows no structure and which is so thin that the electron beam is only slightly reduced in intensity by passage through it. Yet this film, which in turn is supported on a 200-mesh screen, must be strong enough to support its own weight and the weight of the specimen. It must also withstand the surface tension effects which act upon it during the preparation of the specimen and the effects of the electron bombardment it undergoes during examination of the specimen.

These supporting films are often made of collodion. A drop of a dilute solution (about 2% of collodion in amyl acetate) is placed on the surface of distilled water when it instantly spreads into a thin film. After the solvent has evaporated, a still thinner film of nitrocellulose is left. One of the ⅛-inch disks of 200-mesh metal screen is covered with a piece of this film and the mount is then ready for the specimen.

If the material to be examined can be suspended in water or some other liquid which does not soften the nitrocellulose film, a drop of the suspension is placed on the film-covered disk and allowed to dry. The specimen is then ready to be placed in the microscope for observation. This method of preparing specimens is usually suitable for clays, fillers, pigments, fibers, and many microbiological specimens. If the material cannot be suspended in a liquid, it may sometimes be dusted directly onto the supporting film and covered by a second film to hold the particles in place, in case they do not adhere without such help.

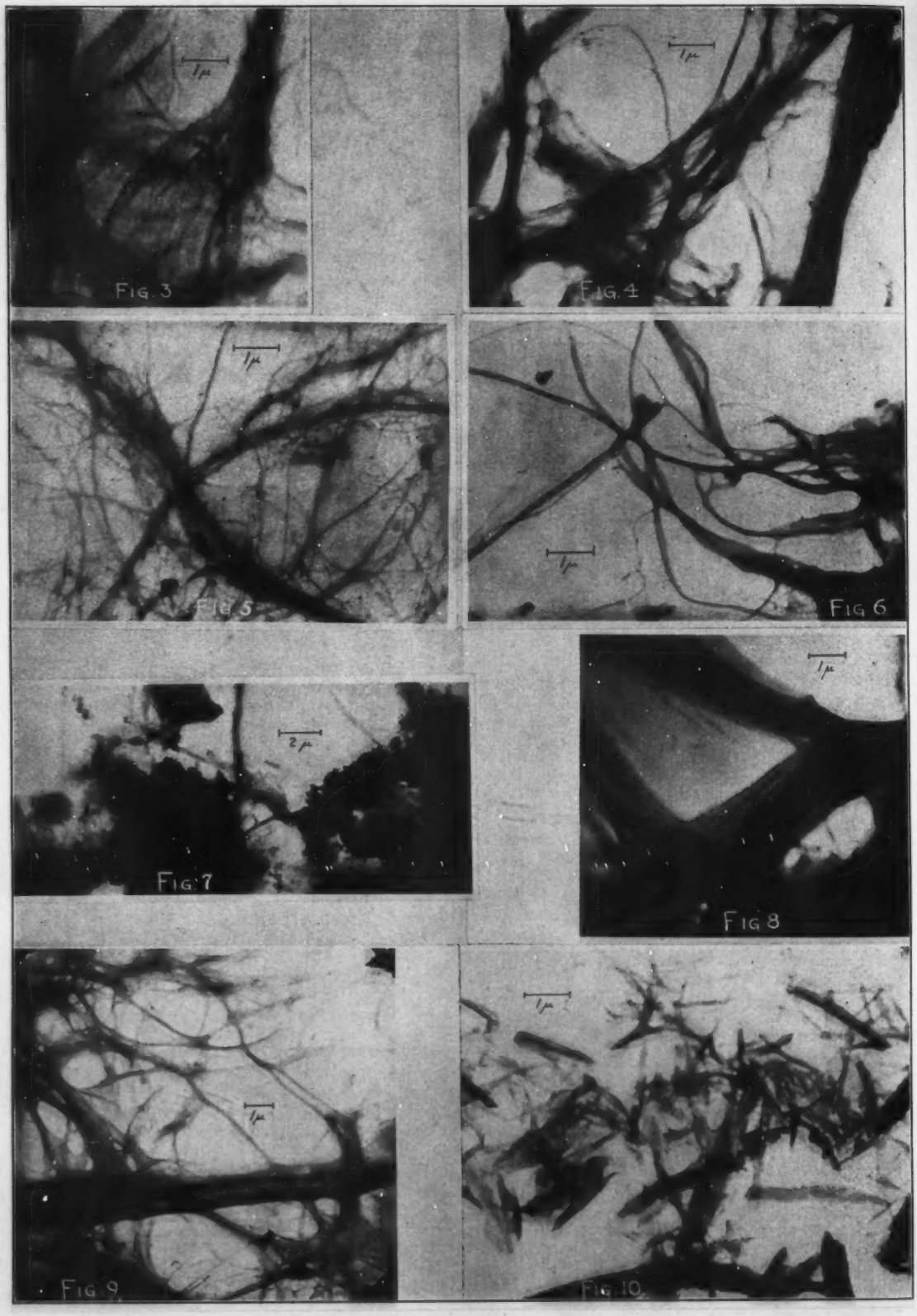
A finely divided material may be suspended in the collodion solution and a film cast from this suspension. The specimen particles are then actually imbedded in the film. In general, specimens prepared by this method show less agglomeration of the primary particles than when prepared from a water suspension. This method is useful in the case of clays, fillers, pigments, and other finely divided chemicals. A variation of this method is to dip the screen disk in the collodion suspension, drain, and allow a film to dry on the disk. This method is applicable also with gelatin as the film-forming material. Suspensions of organic and biological materials may be prepared in aqueous gelatin solutions when organic solvents cannot be used.

Likewise, specimens of materials which are themselves film forming may be prepared from a solution in a volatile solvent by casting a film which may be mounted on the specimen screen or by dipping the screen in the solution, draining, and drying. This method is useful in the case of cellulose derivatives, resins, and other high molecular weight materials which are film forming.

Specimens of smokes, fumes, dusts, and other materials suspended in air may be prepared by allowing the material to deposit directly on the screen disk. The particles form tenuous structures which project out into the openings of the screen mesh sufficiently to permit their observation.

Substances which distill or sublime may be deposited directly on a film-covered specimen screen.

The R.C.A. electron microscope is not adaptable to the examination of solid surfaces—i. e., objects cannot be examined by reflection of the electron beam in analogy to the examination of surfaces in the optical microscope by reflected light. However, an ingenious technique for examining such surfaces has recently been described by Zworykin and Ramberg *(9)*. The method is suitable for the study of surfaces of steel, brass, aluminum, alloys, and many nonmetallic substances. A relatively thick layer of silver is evaporated, in a vacuum chamber, onto the surface. The silver film is then stripped from the surface, yielding a negative replica of the surface. A dilute solution of collodion is flowed over this replica



FIGS. 3 TO 10

For descriptions of photomicrographs see opposite page.

surface and allowed to dry. The metal replica with the adhering nitrocellulose film is placed in a solution of nitric acid and the metal is dissolved, leaving the nitrocellulose film as a positive replica of the original surface. This film is mounted on the screen disk and examined in the microscope. The film is a topographic map of the original surface; thick areas correspond to hills on the original surface and appear dark in the microscope, and thin areas correspond to valleys and appear light in the microscope.

At present there is no "staining" technique for electron microscopic specimens. The equivalents of the stains of optical microscopy are conceivable and may well be a future development.

Applications of Electron Microscopy

The interpretation of observations made with the electron microscope must be made with even more care than in the case of observations made with the optical microscope. The field of view is small and only a minute quantity of material is seen at one time. Good sampling technique is necessary and many observations are required before generalizations can be safely drawn. Constant attention must be paid to the possibility that a particular method of preparing the specimens may introduce apparent characteristics which are not actually typical of the material in its normal state. For example, surface tension effects may fractionate a clay or filler as the drop of water suspension dries on the film-covered screen and, hence, the specimen may appear to be of greater or smaller particle size than it really is. Changes in pH and, particularly in the case of biological specimens, osmotic effects which occur during drying must be considered.

Fibers

Any papermaker would probably look at fibers first, if turned loose with an electron microscope. Although they are not the most convenient materials to examine, a better understanding of their structure and behavior is of unquestionable importance. Relatively little work on fibers has been reported. Ruska *(10)* examined sections of bast, cotton, natural silk, and artificial silk fibers. Ruska and Kretschmer *(11)* followed the chemical degradation of cotton fibers, and a study of wool was briefly reported by Zahn *(12)*. We have begun a study of common papermaking fibers and have preliminary results to report.

Whole fibers are too large to be seen in their entirety but the finer fractions of a stock and the contours of the larger fibers can be examined. The most interesting observation up to this time is the existence of fine fibrils on the fibers and fiber fragments of all stocks that have been examined. These fibrils are too fine to be seen in the optical microscope; in order to distinguish between these new fibrils and those previously seen in the ordinary microscope and commonly referred to in the literature as fibrils, fibrillae, or threads, these structures will be referred to in this paper as "subfibrils." They are shown in Fig. 3 which is a micrograph of a specimen of moderately beaten unbleached sulphite pulp. They can be seen splitting away from the fiber fragment and twining about themselves; the coarser ones frequently split into finer ones. The relative fineness of these subfibrils is better appreciated when it is remembered that the finest fibril which can be seen in the ordinary microscope at a magnification of 100× has a width of about 1.5μ—i. e., a width in Fig. 3 of approximately one and one half times the length of the scale mark. The same general type of "subfibrillation" is found in soda and kraft pulps as well. Figure 4 is a micrograph which was obtained from a specimen of well-beaten kraft pulp. The fact that the largest structures in these views are only minute fragments of the whole pulp fiber must be emphasized. Smooth contours of portions of whole fibers are occasionally glimpsed, although they are difficult to photograph because such large dense structures are so severely bombarded by the electron beam that they are quickly destroyed.

Because of the interest of the Technical Association of the Pulp and Paper Industry (TAPPI) in fiber skin substance, as evidenced by the research project which the organization sponsored at The Institute of Paper Chemistry several years ago *(13-15)*, it is appropriate to mention briefly the results of some observations which bear on that subject. It was suggested that skin substance be obtained by lightly scuffing an unbeaten sulphite pulp. The material was prepared in the following way: The unbeaten pulp was fractionated and the "on 65-mesh" fraction was treated for several hours in the British disintegrator and again fractionated. The fines which passed through a 150-mesh screen were examined. A typical view of the material is shown in the micrograph of Fig. 5. It appears to be composed largely of subfibrils. In one of the many observations, material was seen which seemed membrane-like in nature, although it was so badly torn and stretched that it was impossible to decide whether it was originally continuous and homogeneous or was a tightly bound parallel array of subfibrils. The commonly observed ballooning of fibers in swelling experiments seems to demand the existence of membranes, but apparently the membranes are not isolated in recognizable form by the method described above.

The extreme physical mistreatment received by a glassine pulp is evident in electron microscopic observations. Relatively few fibers are found which are completely opaque to the electron beam and the larger fibers appear macerated and striated. A large proportion of the material appears to be of subfibril size and quite similar to the material shown in Fig. 6.

Groundwood is a particularly interesting material because of the diversity of the forms seen. Its great surface and the "sponginess" of some of the fragments are indicated by the micrograph of Fig. 7. In addition to these rather nonfibrous chunks, groundwood contains subfibrils generally similar to those of the chemical pulps as well as the intermediate structures of Fig. 8.

It might be expected that rag stock would show an extensive development of subfibrils, and that is the case as may be seen in Fig. 9, which is a view obtained from the fine fraction of a rag stock.

The existence of these subfibrils is of interest in considering the bonding and felting of fibers in a sheet. They must entangle with each other and with fibers and fiber fragments to contribute to the bond-

Figs. 3 to 10

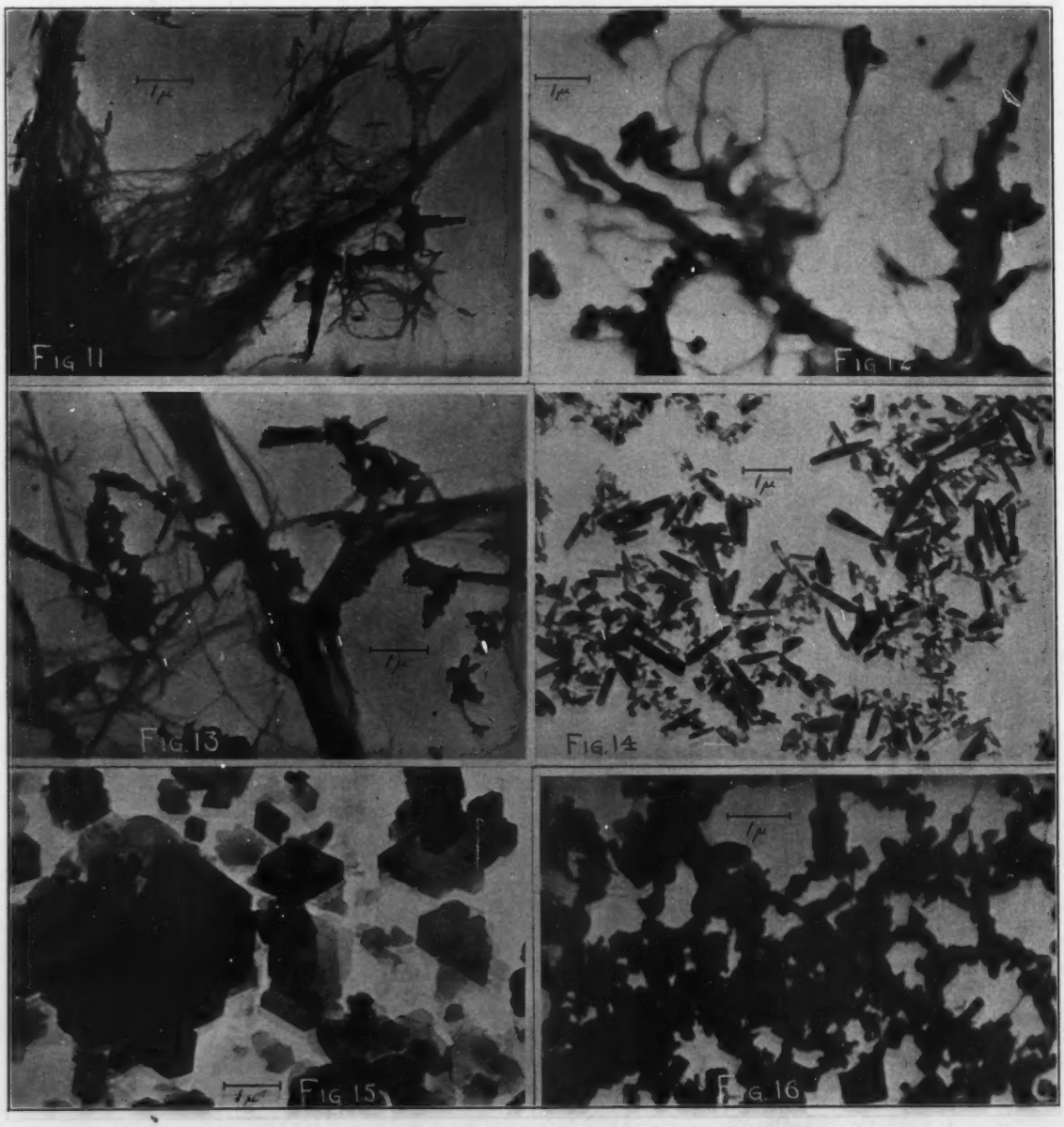
For description of photomicrographs see opposite page.

Fig. 3. Sulphite Pulp
Fig. 4. Kraft Pulp
Fig. 5. "Skin Substance"
Fig. 6. Glassine Pulp
Fig. 7. Groundwood, "Chunks"
Fig. 8. Groundwood, Fibrils
Fig. 9. Rag Stock
Fig. 10. Pigment Dye

ing ordinarily ascribed to cellulosic cement and the entanglement of the usual fibrils. The otherwise relatively large pores in a sheet may be bridged and laced by these fine tendrils. Likewise, these fine structures must contribute to the retention of fillers and pigment dyes. The width of the subfibrils have not been carefully measured, but the finest can be no more than 50 mμ (500 Angstrom units) in width and may be still less.

Dyeing and Sizing

The study of dyeing with pigment dyes is an interesting field for the electron microscope. A micrograph of a common pigment dye (Ponsol blue R.P. triple powder) is shown in Fig. 10. The size and shape of the particles render plausible the suggestion that their retention is aided by entanglement in the fibrils and subfibrils of a pulp, as well as by the bonding action of the sizing agent and any specific affinity of the fiber for the dye. As the first step in a study of dyeing, the pigment dye shown in Fig. 10 was added to a bleached sulphite stock; no size was added. Because of the difficulty of observing whole fibers the relative distribution of dye particles over the fiber is not certain, but there seems to be a tendency for the particles to concentrate in the fibrillated portions of the fiber. A typical view of the dye particles on and in a part of a fibrillated fragment is presented in Fig. 11. Some of them seem to be enmeshed in the subfibrils and others seem to



Figs. 11, 12, 13, 14, 15 and 16

Fig. 11—Pigment Dye on Unsized Sulphite Pulp. Fig. 12—Rosin-Sized Sulphite Pulp. Fig. 13—Dyed and Sized Sulphite Pulp. Fig. 14—Precipitated Calcium Carbonate. Fig. 15—English Coating Clay. Fig. 16—Zinc Oxide.

be resting on the fragment as if they had merely settled out when the drop of water suspension dried on the film-covered specimen screen. The concentration of dye in the suspension was that of a deeply dyed stock.

The result of rosin sizing the undyed stock in a test tube batch is shown in Fig. 12. The presence of the sizing agent in the form of small discrete lumps is clearly indicated. The fibers, fibrils, and subfibrils are by no means completely covered.

Having thus had a glimpse of the results of pigment dyeing without the addition of rosin size and of sizing an undyed stock, it is interesting to note the result of the more practical papermaking operation of adding sizing agent to the suspension of pulp and pigment dye. A test tube process yielded the specimen shown in Fig. 13. The expected binding of pigment particles to the stock by the rosin size is illustrated. The presence of size particles on the dyed particles is noteworthy. The relative distribution of the dye over fibers, fibrils, and subfibrils is not known. However, even in a deeply dyed stock the fibrous material is by no means covered by or even densely spotted with pigment particles.

Fillers

The study of clays and fillers is definitely valuable, particularly so with regard to the effects of processing variables and special treatments. Changes in particle size and shape, and such changes in surface as can be inferred from changes in the outline of the particle, may be easily followed. Lukens, Landes, and Rochow *(16)* have described differences between ground natural and precipitated calcium carbonates as shown by electron microscopic observation. Differences at least as marked are found between precipitated calcium carbonates. The effects of changes in the rate of precipitation and of crystal growth in solution can be noted.

Clays contain particles having not only a wide range of outline and size but of thickness as well. The elementary particles of the papermaking clays which have been examined are thin plates which appear semitransparent to the electron beam. Some of the larger particles appear to be laminar agglomerates of these plate-like particles and the outlines of the superposed plates can be distinguished. Many large particles are too thick to show internal structure. The outlines of plate-like particles frequently exhibit the 120 deg. angles to be expected of a hexagonal shape.

The particles of many fillers have characteristic shapes which are so varied and range from regular symmetrical outlines to such extremely irregular outlines that enormous variations in surface are indicated. Electron microscopic observations should be of help in differentiating between the contributions of particle size and particle shape to surface area. Both size and shape, through surface area, are related to such practical problems as the amount of binder used in coating compositions. Space does not permit showing some of the interesting variations in fillers, and the micrographs presented here must be limited to a fine precipitated calcium carbonate (Fig. 14), an English coating clay (Fig. 15), and a zinc oxide (Fig. 16).

Microbiology

The daily press and weekly magazines, as well as scientific journals, have frequently reported the application of the electron microscope in biology and medicine. The microscope is of help to the microbiologist in the paper industry as well. Among other applications, it is of use in following the growth and development under various conditions of encapsulated bacteria which contribute to slime formation in the paper mill and of the spore-forming bacteria of interest in the problem of sterilization of paper on the driers. Such studies are being carried on at The Institute of Paper Chemistry *(17)*. In addition to structural studies, *per se*, studies of characteristic shapes and structures of bacteria by means of the electron microscope may provide assistance in the tedious and difficult problem of identifying bacteria.

These few subjects by no means exhaust the possible fields of application of the electron microscope in the paper industry. Among the more obvious of the others are: the examination of wood fibers before and after various stages and types of cooking; the observation of the retention of fillers by fibers sized by different agents; the study of the interaction of fibers and adhesives, impregnants, and inks; and a search for characteristic behavior of various papermaking fibers during the steps of stock preparation with the aim of aiding in the explanation of their subsequent behavior and properties.

In conclusion, it might be pointed out that although the electron microscope is a fascinating instrument it, like the optical microscope and many other laboratory instruments, should not be considered a field of research in itself but as a tool to be used with other tools and other laboratory methods to gather information and data which may be used both directly and indirectly in the solution of practical papermaking problems.

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Paper Characteristics Versus Ink Coverage*

By George Cramer [1]

Abstract

The characteristics of paper which affect the covering power or ink mileage are smoothness, absorbency, and receptivity. Either of these factors may affect the coverage as much as ± 25%. The results of extensive tests on the covering power of ink are given and discussed.

The literature, during the past quarter century, on ink coverage illustrates rather forcibly that in most instances all the factors involved were not carefully investigated. Most of this data concerns itself about ink requirements for letterpress. The writer, in this treatise, considers ink coverage from the lithographers' point of view. Little, if anything, has been published on our subject from this angle. Lithographic inks, aside from their special qualifications for this process, are essentially of greater tinctorial strength than is the case with letterpress inks. This requirement is important in view of the manner of impression—in lithography being by means of a rubber blanket—while in letterpress the transfer is made directly from type. The deposit of ink on paper by lithography is considerably less; thereby, requiring stronger inks to get comparable results. Any statement indicating relative ink requirements for these two graphic systems would necessarily be a guess, in view of the fundamental differences in the inks as well as the process. Even though coated papers may be of different composition for letterpress and lithography, the factors that determine the coverage per pound of ink are essentially the same. Thus the results obtained can be assumed to hold equally true for both letterpress and lithography.

The need for a fairly accurate table of ink coverage for lithographic estimating could not be realized without the instigation of considerable research. Strangely enough in this study, it was discovered that many factors previously overlooked have a vital bearing on the results obtained. Naturally it was to be expected that surface smoothness of the stock would determine ink coverage; and a large series of scientifically conducted tests confirms this assumption. It might be interesting to note that differences as high as 50% in ink mileage could be attributed to surface conditions of various papers. The tests mentioned above were run on a number of different lithocoated stocks and on several offset stocks—all of these stocks being from different mills and having different quality characteristics. The inks employed covered a complete range of colors and gravities and consisted of eighty-four items. Several hundred of each of the previously mentioned stocks were lithographed in all of the colors, after which each characteristic affecting ink mileage was studied. This investigation also took into account those ink characteristics such as specific gravity, color strength, opacity, and working properties—all of which are vitally associated with ink coverage. It is almost impossible that a study of this kind can be all inclusive. This view was impressed upon us as this study was continued, for it seemed as though the results noted were specific for each condition encountered. In order therefore to establish a reference table for ink coverage, all stocks had to be grouped into coated and offset; and all inks had to be combined as either toners or lakes. If this had not been done, the tables would necessarily have been so cumbersome as to be ineffective and impractical.

The paper characteristics that affect ink mileage are smoothness, absorbency, and receptivity. Each of these qualities can either add to or subtract from the expected coverage of a specific ink. While it is rather difficult to determine which of these paper factors creates the greatest spread, it can be said that according to the results as found in our investigation that either one of them can effect differences of plus or minus 25%. The smoothness of a stock to be printed might be compared to a rough wood panel to be painted. We all undoubtedly have had the amateur experience of trying to paint a rough piece of wood and noting that it required more paint than a smooth piece. Paper surfaces appear smooth to the naked eye, but under a high-powered glass, hills and valleys are quite evident. In order to get a smooth print, the lithographer must use enough ink to give him the required coverage. Thus the lay of the ink on the paper will call for certain poundages regardless of the color or strength of the ink or inks being used. If the color effect is stronger than the copy when the proper lay has been obtained, then the lithographer can only reduce his ink by the addition of approved extenders. Thus it must follow that the smoother the paper stock the better the lay with the least amount of ink.

Smoothness Factor

In order to illustrate the smoothness factor in *paper stocks* and to note particularly unusual differences in ink mileage, we present the following actual figures taken from test runs made on a series of colors.

BLACK	Stock A	157,000	Stock B	226,800	sq. in. per lb.	Difference	44%
YELLOW 2.12 sp. gr.	Stock C	94,950	Stock B	158,840	sq. in. per lb.		67%
YELLOW 1.2 sp. gr.	Stock A	133,500	Stock B	200,000	sq. in. per lb.		50%
RED	Stock D	217,000	Stock B	275,000	sq. in. per lb.		26%
BLUE	Stock D	215,000	Stock B	289,500	sq. in. per lb.		34%

An examination of the above figures on the ink mileage of four different coated stocks will indicate that paper Stock B is the smoothest. This conclusion is borne out by other quality tests made on these same stocks. In selecting these stocks note was made to assure reasonable likeness in the other paper qualities. Undoubtedly, not much argument can be raised in that smoothness is one controlling element; yet it is unlikely that the differences indicated above are known to exist. Mileage differences of from 25 to 65%, due to paper surface smoothness, seem unusual; yet actual test runs indicate such a wide variation. In this connection, however, let us hasten to mention that some qualities of inks may tend to either add to or detract from paper smoothness, depending somewhat on opacity, density, or distribution. Heavy inks, as in the case of the high-gravity yellow, are

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more sensitive to differences in stock smoothness than is the case in lighter weight reds or yellows.

Thus far no mention has been made concerning our findings for litho-offset stocks. Here again smoothness is a factor, but the differences in ink mileage were considerably less noticeable than where we were making a study of coated stocks. Differences of not over 10% were noted. In making this investigation, we at all times matched a definite copy for color; but where color comparisons were made between results obtained on coated stocks *versus* offset stocks it was necessary for us to overlook a degree of color brightness. In these matches, color values were all that we could hope to ascertain. Average figures obtained from a large number of press sheets indicate a 25% increase in mileage for representative coated stocks as indicated below.

	Coated	Offset	Difference
ORANGE 1.26 sp. gr.	175,000	132,000 sq. in. per lb.	32%
CERISE 1.67 sp. gr.	260,000	190,000 sq. in. per lb.	37%
PURPLE 1.42 sp. gr.	250,000	225,000 sq. in. per lb.	11%
BROWN 1.14 sp. gr.	300,000	200,000 sq. in. per lb.	50%

Absorbency

Differences in stocks in respect to penetration sometimes make for larger ink mileage variations than do some of the other paper characteristics. In order to more thoroughly investigate this condition, a series of coated stocks were selected which showed penetration differences as indicated by the K & N system. Offset stocks were not considered for penetration differences inasmuch as these stocks do not indicate noticeable color variations as is the case with litho coated stocks. The first phase endeavored to disclose the fact that with equal amounts of inks on stocks of varying penetration tendencies distinct color differences are evident. We learned that these variations in color brightness were directly related to the stock penetration qualities and in proportion to indications by our previous K & N tests. These findings led us to our specific endeavor, which was to determine the ink consumption of these various paper stocks. With this in mind we proceeded to apply the amount of ink required to match a specific copy and then determining the ink mileage for each stock. In some cases it was rather difficult to get an exact match, but in the estimation of the investigators commercial matches were obtained in each instance. Indicated below are a few cases which show differences in ink consumption due to penetration variations.

			Difference
LEMON YELLOW 2.15 sp. gr.	Stock E 136,000	Stock F 105,000 sq. in. per lb.	30%
BRILLIANT RED 1.11 sp. gr.	Stock G 220,500	Stock H 275,800 sq. in. per lb.	25%
PROCESS BLUE 1.26 sp. gr.	Stock H 281,500	Stock I 225,150 sq. in. per lb.	25%
GREEN 1.47 sp. gr.	Stock H 245,900	Stock J 185,600 sq. in. per lb.	32%

Where a specific job is being encountered, ink formulation changes can be made to overcome undue penetration factors; thus ink differences, must be also considered as having a bearing on the results. In this test run only standard inks were used for our fact finding.

Receptivity

Lack of ink receptivity gives the ink maker more difficulty than any of the other paper characteristics and even though this condition is not encountered frequently, its headaches seem to be so much more impressive that any dealings with such paper qualities are much more lasting. Stocks of such a nature are inclined to give much greater mileage per pound of ink and one might wonder why the ink maker would be so concerned. This difficulty lies in two directions, both of which are quite bothersome. In the first place it is almost impossible to match the copy, thus creating a customer dissatisfaction. Secondly, if the ink is crowded on, an offset condition is created which even sprays will not help. The unusually hard surfaces of these stocks do not allow for any penetration whatsoever; consequently, bringing into being the results indicated above, plus mottling and, sometimes, even spottiness. Here too, ink formulation changes can be made to assist, but in most instances even though greater mileages are obtained from the inks being used, the general results produced are unsatisfactory, due to dull, lustreless reproduction. Invariably the inks are blamed for such work, the pressman claiming lack of color strength, but in most instances the lack of ink receptivity is the controlling factor. If careful checks were made on the amount of ink used on such jobs in comparison to normal requirements, it would not take long to discover the real cause. We list below a few results obtained in our investigation which illustrate this paper factor. We have known some inks to have double their normal coverage due to lack of ink receptivity, but in each case the finished job lacked the punch which is always looked for.

			Difference
SILVER 1.18 sp. gr.	Stock A 212,600	Stock K 388,800 sq. in. per lb.	83%
NEUTRAL BLACK 1.12 sp. gr.	Stock A 141,750	Stock K 194,400 sq. in. per lb.	37%
ORANGE 1.36 sp. gr.	Stock A 160,100	Stock K 236,000 sq. in. per lb.	49%
PURPLE 1.54 sp. gr.	Stock H 510,200	Stock L 258,400 sq. in. per lb.	97%

The large variations as shown above are rather unusual, but these particular ones were picked out to indicate that such differences are known to exist. If one were to compare the various copies, he could see a noticeable difference in the results produced—yet in some instances this is the only result obtainable, due to the other factors mentioned. Certain ink qualities, principally strength, exaggerate the lack of ink receptivity of some paper stocks.

Other Factors

Thus far we have discussed only those factors in paper which affect ink coverage. It is now our intention to see just how certain ink factors determine the square inches of paper stock covered by a pound of ink. Continuing the procedure followed in the first half of this paper, we find that pigment strength, specific gravity, and color itself all have a distinct relationship to the results accomplished. Before proceeding, let us describe the above variables as the ink maker views them. Pigments, when compared, are usually considered as either strong or weak, depending on their ability to tint certain opaque white pigment pastes. Thus, if we examine red pigments, we will discover that some reds may have 50 to 100% greater tinctorial strength than others. A comparison of yellows will show differences of as much as 1000%. Similar variations are noted in blacks, blues, greens, purples and browns. Much discussion has been created as to the possibility of selling inks by volume rather than by weight since the lithographer or the printer makes application by volume. The specific gravity of inks is the quality being considered and is determined by the gravity of the pigment being used as well as the percentage of such pigments in

the inks themselves. Inks will vary in gravity from 1.0 to 2.5, but gravity alone cannot be taken as a measure of coverage. Careful investigation of the suggested sale by volume reveals that paper qualities as well as inherent strength of inks must not be overlooked. The last ink factor evolves around the color itself. Color strengths increase from yellow to red to blue to black to purple. Thus there follows a rather natural scale of color values from the light to the dark, except for black, which seems to follow its own pattern.

Effect of Color

Undoubtedly, color values can produce greater ink coverage than many of the other factors involved. Thus our investigation leads us to look carefully into this phase of ink mileage. In order to find the facts without too many other variables, a well-known offset coated stock was selected for further testing. We must always keep in mind that a copy is to be matched; consequently, coverage secured from a set of inks will indicate the relative color values. Results obtained with the objective of determining ink mileage due to color values follow.

Color	Coverage	Difference
PRIMROSE YELLOW.....	104,650 sq. in. per lb.	
YELLOW LAKE	206,950 sq. in. per lb.	98%
ORANGE 8	236,000 sq. in. per lb.	
ORANGE 5	298,000 sq. in. per lb.	26%
RED 34	229,350 sq. in. per lb.	
RED 31	281,600 sq. in. per lb.	23%
GREEN 20	163,300 sq. in. per lb.	
GREEN 5	285,500 sq. in. per lb.	74%

The strength of an ink does not always give results in proportion to its value. This is due to the fact that a certain amount of ink is required to cover a stock regardless. Strength comparisons frequently cover a wide range and it is not unusual to find some inks that will cover twice or three times as many square inches as others. The biggest differences are found in yellow, as is brought out in the chart above.

The specific gravity of an ink is a factor in the coverage obtained, but here again, both color strength and color hue should enter our consideration in evaluating the results. In making our investigation, we tried to pick out those inks that illustrate the relationship between the gravity of an ink and its coverage. Only a true picture can be drawn if color values are relatively equal thus

ORANGE 15—sp. gr. 1.26—coverage 173,500 sq. in. per lb.
and
ORANGE 25—sp. gr. 2.48—coverage 114,050 sq. in. per lb.

show a coverage difference of only 52%, whereas the gravity difference amounts to 96%.

BROWN 80—sp. gr. 1.57—coverage 196,000 sq. in. per lb.
and
BROWN 81—sp. gr. 1.14—coverage 211,500 sq. in. per lb.

differ in coverage by only 8%, whereas Brown 80 is 34% heavier. As we have contended before, we again wish to state that even though the gravity of an ink does have some bearing on ink mileage, the relationship is by no means one that can be calculated in advance. This thought is confirmed by the two illustrations just indicated.

As we mentioned earlier, expected ink coverage is dependent on the color being considered. Thus we find that the lighter colors are generally the weakest and as we proceed to the reds, blues and purples, we note an increasing scale in covering ability. Black, one might quite naturally think, is the strongest of the colors; this, however is not the case. Even though black possesses great intensity, it cannot be compared on a bleach basis with purple toner. In this instance tests indicate that black has only half the tinting strength of the purple mentioned. Carbon black is so bulky that its percentage in any ink formulation would necessarily be limited. For the purpose of our study of ink coverage we feel it best not to consider black in this phase of our investigation. In order to illustrate our finding, we will indicate below a series of results secured in our study. All of the figures were obtained from the same coated stock. To indicate the sequence of color hues and color coverage we intend to show first the weak colors and later the strong ones as follows:

WEAK COLORS	
YELLOW 46	104,700 sq. in. per lb.
ORANGE 52	114,000 sq. in. per lb.
RED 34	200,000 sq. in. per lb.
BLUE 35	215,000 sq. in. per lb.
PURPLE 2	258,000 sq. in. per lb.
STRONG COLORS	
YELLOW 38	233,500 sq. in. per lb.
ORANGE 18	236,000 sq. in. per lb.
RED 27	295,750 sq. in. per lb.
BLUE 40	326,000 sq. in. per lb.
PURPLE 3	378,000 sq. in. per lb.

Just as in any other scientific investigation, do we accumulate results that do not seem to have any ready explanation. We refer particularly to ink coverages that we obtained with relatively weak colors that ran far greater than any analysis of strength, opacity, or gravity would warrant. After comparing these results with the others, we discovered that the copy which we had to match was light in comparison to the others. We indicate these results, believing that they will prove a point as regards either lack of ink coverage or excessive coverage. The inkmaker is occasionally brought to task for poor ink coverage when, in reality, the fault may lie in overapplication. We made no effort to prove this point, since it was not the objective, but by listing these results we feel that they will prove the above case.

BLUE 5 (very weak color).....	291,150 sq. in. per lb.
BLUE 32 (three times as strong).....	226,800 sq. in. per lb.
GREEN 16 (weak color).....	272,160 sq. in. per lb.
GREEN 20 (twice as strong).....	185,600 sq. in. per lb.

Thus we have a series of colors that are not at all "according to Hoyle" but it is our confident belief that the strength of the copy explains everything. It seems so easy for a lithographer to go somewhat stronger than his copy thus creating poor mileage.

Considering the above data, we will now attempt to balance all of the factors involved and set up a workable chart that can be used in estimating ink consumption for offset lithography as follows:

COLOR		Coated Stock	Offset Stock
YELLOW	Toners	200,000 sq. in. per lb.	150,000 sq. in. per lb.
	Chromes	100,000 sq. in. per lb.	75,000 sq. in. per lb.
ORANGE	Toners	200,000 sq. in. per lb.	150,000 sq. in. per lb.
	Chromes	120,000 sq. in. per lb.	90,000 sq. in. per lb.
RED	Toners	225,000 sq. in. per lb.	175,000 sq. in. per lb.
	Lakes	175,000 sq. in. per lb.	125,000 sq. in. per lb.
BLUE	Toners	250,000 sq. in. per lb.	200,000 sq. in. per lb.
	Lakes	200,000 sq. in. per lb.	150,000 sq. in. per lb.
PURPLE	Toners	275,000 sq. in. per lb.	210,000 sq. in. per lb.
	Lakes	200,000 sq. in. per lb.	150,000 sq. in. per lb.
GREEN	Toners	225,000 sq. in. per lb.	175,000 sq. in. per lb.
	Lakes	175,000 sq. in. per lb.	125,000 sq. in. per lb.
BLACK		185,000 sq. in. per lb.	135,000 sq. in. per lb.
SILVER		250,000 sq. in. per lb.	180,000 sq. in. per lb.

The above chart is figured on the basis of 100% coverage, thus, if only 50% or 25% of the sheet is covered, the ink coverage is multiplied either by two or four, whichever the case may be. The same is true for three quarter tones, half tones and quarter tones using the reciprocal of the tone involved—thus four thirds, two or four. The writer feels that the above chart can be used for estimating lithographic ink mileage; but unusual factors should not be overlooked.

NO REPRIEVE

...FOR Slimeform*

...with W&T on the job!

There's no reprieve for slime-forming micro-organisms when a W&T treatment system is operating in your plant. Your output is safeguarded at all times from difficulties such as obstructed lines, plugged felts, blinded wires, spots, stains and pin-holes resulting from slime-formers.

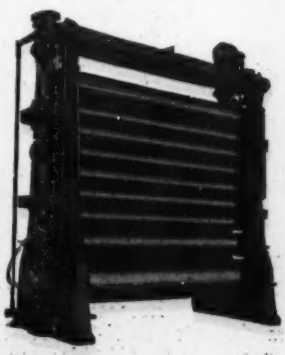
Wallace & Tiernan is still in a position to aid many paper producers facing this dangerous foe at a time of peak demand, by establishing microbiological control of entering and circulating water. Experience in more than 300 mills has shown how closely controlled application at the proper points can conserve chlorine and yet eliminate microbiological growths. For information that will help keep your plant processes permanently slime-free, get in touch with Wallace & Tiernan today. P-33

*Slime-forming organisms that thrive in process water

WRITE FOR 42-PAGE BOOKLET
"Microbiological Control in Pulp and Paper Manufacture" discusses latest practice now employed at prominent mills. Write for a copy of TP472.

WALLACE & TIERNAN, CO., Inc.
MANUFACTURERS OF CHLORINE AND AMMONIA CONTROL APPARATUS
NEWARK, NEW JERSEY • REPRESENTED IN PRINCIPAL CITIES

★ Lobdell Calender Stacks are built, first, to assure the uniformly fine finish required of quality paper; second, to give the efficient, rapid production —long life—and low production and maintenance costs so essential to profitable mill operation, now and in days to come. Complete information on how they fit your production program is yours, without obligation. Just write-



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Calender Stacks

LOBDELL CAR WHEEL CO., Wilmington, Del.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Importers may have their shipments listed in these columns by submitting records of imports to this publication.

NEW YORK IMPORTS

WEEK ENDING MARCH 15, 1942

RAGS, BAGGINGS, ETC.

Lush Cotton Products Co., ——, ——, 60 bls. cotton pickers.
——, ——, ——, 797 bls. cotton linter motes, 933 bls. cotton linters.
Schimmel Trading Corp., ——, ——, 71 bls. cotton picker waste.

CASEIN

Canadian Plastics Co., ——, ——, 20 bags.

GLUE STOCK, ETC.

——, ——, ——, 4,064 bags glue bones.
——, ——, ——, 480 bags bone glue.
——, ——, ——, 1,040 bags reject bones.
——, ——, ——, 1,274 bags bone residue.

PHILADELPHIA IMPORTS

WEEK ENDING MARCH 15, 1942

English China Clays Sales Corp., ——, ——, 696 tons china clay.
United Clay Mines, Corp., ——, ——, 248 tons china clay.
Paper Makers Importing Co., ——, ——, 380 tons china clay.
J. W. Higman Co., Inc., ——, ——, 190 tons china clay.
Moore & Munger, ——, ——, 275 tons china clay.
Ross Tacony Crucible Co., ——, ——, 50 tons china clay.
E. I. du Pont de Nemours Co., ——, ——, 200 tons china clay.
——, ——, ——, 70 tons china clay.

New Literature

Booklet entitled "Patent background for engineers", issued by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis., is particularly useful for engineers and executives who deal with inventions. Written by patent attorneys and engineers for the layman, it covers basic patent considerations, drawing, specifications and claims in evaluation, patent fallacies, safeguarding inventors' rights, trend and development of American patent law and other aspects of the subject.

Supplementary treatment of boiler water, is discussed in Bulletin No. 2420, issued by The Permutit Company, 330 West 42nd street, New York. It presents a complete discussion of the various ways in which a plant might feed chemicals to further condition the water after external water treatment.

Complete refractories service, is the title of a catalogue issued by the General Refractories Company, Philadelphia, Pa. This publication not only describes many refractory products, but contains many useful tables for figuring proper number and combinations of brick and firebrick construction.

Integral-furnace boilers, are described in Bulletin G-34-A, issued by The Babcock & Wilcox Co., 85 Liberty street, New York. It covers B & W boilers classes 9, 12 and 15, for lower capacities, as low as 135 hp. or 9,000 lb. steam per hr. and for stoker or oil firing. Details of construction and operation are included.

Acid-handling pumps, are described in Bulletin No. 308, issued by Oliver United Filters, Inc., 33 West 42nd street, New York. It describes the design and application of the "Olivite" pump, which is highly resistant to most acid and corrosive solutions; combining in one unit a centrifugal solution pump with an acid-handling pump.

Pressed steel trucks and truck wheels, are described in Catalogue T-41, issued by the American Pulley Company, Philadelphia, Pa. It covers the company's varied line of paper roll trucks, general utility, railroad and industrial trucks. Special purpose trucks and other material handling equipment is included.

Butterfly valves, are described in Catalogue No. 10-B, issued by the R-S Products Corporation, 4530 Germantown avenue, Philadelphia, Pa. It covers standard and special butterfly valves for air, gas, steam, liquids and semi-solids, under high and sub-zero temperatures, and pressures from 2 to 300 p.s.i. Dimension tables and a valve velocity chart are included.

A high-pressure condensate return system, is described in Publication 3025, issued by the Cochrane Corp., 17th & Alleghency avenue, Philadelphia, Pa. It discusses the engineering features of the Cochrane-Becker system, with specifications and a typical installation.

Photoswitch smoke alarm, Type A25C, manufactured by Photoswitch, Inc., 21 Chestnut street, Cambridge, Mass., increases combustion efficiency by indicating the degree of smoke density, passing through the stack, and signalling conditions of efficient combustion of excess smoke on green and red signal lights. The equipment includes photoelectric control, light source and indicator.

Air pumps are described in a loose-leaf catalogue issued by the Gast Manufacturing Corporation, Benton Harbor, Mich. It gives concise information on the company's line, specifications, engineering data and performance tables. The new Gast V-belt driven air pump is included.

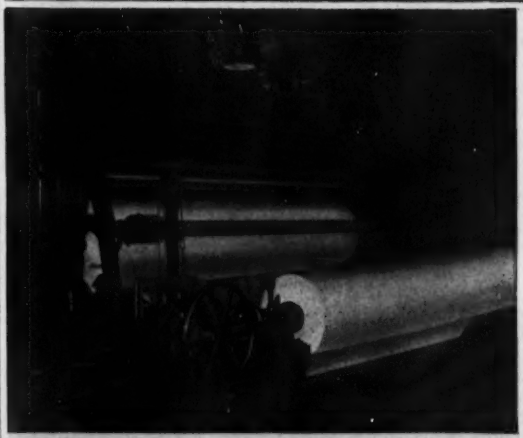
Recording equipment is described in revised Catalogue N-91-163, issued by the Leeds & Northrup Co., 4934 Stenton avenue, Philadelphia, Pa. It covers recent improvements in Micromax CO_2 recording equipment, with full-size reproductions of record and strip-charts and illustrations of installations.

Safety steel scaffolding is described in a catalogue issued by Mechanical Handling Systems, Inc., 4600 Nancy avenue, Detroit, Mich. It gives details of the company's "Quik-Set" steel scaffolding for above floor painting, wiring, machine repair, etc. Construction and assembly details are included.

Appleton Wires are Good Wires

Appleton Wire Works, Inc., Appleton, Wisconsin

"more evenly wound rolls"
SAYS ST. CROIX PAPER COMPANY



Cameron Mill-Type Web Tension Control insures uniform density of rewound rolls and fewer web breaks. Water-cooled friction device prevents overheating at high speeds.

"In comparison with the manual control of tension, we have found that your Constant Tension Unwind Stands give more evenly wound rolls; all rolls wound the same, as the tension is always the same, whereas with manual control it depends on the man operating the winder; less winder breaks; and better starts at the core."

Thus the St. Croix Paper Company, Woodland, Maine, well expresses some of the outstanding features of CAMACHINE Constant Tension Unwind Stands. Additional data about these machines are available in an interesting folder, with detailed illustrations and drawings, which are available on request.

CAMERON MACHINE COMPANY
61 Poplar Street, Brooklyn, New York
MIDWEST OFFICE: Harris Trust Building, 111 West Monroe Street, CHICAGO

CAMACHINE

New York Paper and Pulp Market Review

Wood Pulp Allocation of Production and Consumption Ordered By the War Production Board Will Go Into Effect May 1, 1942 — Waste Market Active — Roofing Rags Steady — Others Firm.

Office of the PAPER TRADE JOURNAL,
Wednesday, March 18, 1942.

A somewhat easier situation in the supply of paper, in general, is indicated in reports received from many manufacturers' representatives, jobbers, and general paper merchants during the current week. Production of mills continues at capacity, with demand continuing very heavy in paper board and in wrapping paper.

The index of general business activity for the week ended March 7 declined to 132.3%, from 136.7% for the preceding week, compared with 121.7% for the corresponding week last year. Paper board production was fractionally lower.

Paper production for the week ended March 7 was estimated at 102.3%, compared with 91.0% for 1941, with 83.4% for 1940, with 84.2% for 1939, and with 70.1% for the corresponding week for 1938.

Paper board production for the week ended March 7 was 101.0% compared with 80.0% for 1941, with 69.0% for 1940, with 70.0% for 1939, and with 61.0% for the corresponding week for 1938.

Some reports received this week reflect anxiety in regard to the future supply of sanitary tissues. Some converting mills are reported closed and others about to close for lack of pulp. In other quarters, the situation is reported as less serious than had been first reported. Shortages of pulp of the grades preferred and long used by mills, has been steadily becoming more serious for many months.

Paper production, in general, is reported to have exceeded orders for January and February, with the average production rate up 27.1% for the first month of this year, compared with the like month last year.

The price situation remains unchanged, with the expectation in some quarters that a joint agreement on newsprint paper between the United States and Canada, will continue to maintain the prevailing $50 per ton price, plus the possible inclusion of differentials to cover increases in transportation costs.

Chemical Pulp

The allocation of all wood pulp produced or consumed in this country will be undertaken by the War Production Board on May 1, 1942. The stated objective is to conserve the supply and distribution of wood pulp. This is explained in General Preference Order M-93, issued March 12 by the Director of Industry Operations, War Production Board.

Rags

Mill buying of cotton cuttings is reported steady at prevailing average, representative quoted market prices.

The old rag market is active, with mill buying of mixed rags reported fair to good at this date.

Old Rope and Bagging

Mill buying of old Manila rope is reported steady at the OPA ceiling price.

Demand for scrap bagging continues fair at this date. Prices are firm and unchanged on gunny and roofing bagging.

Old Waste Paper

Mill buying of waste paper is active for all grades. The trade is expecting a clarifying order from the OPA to dispel dissatisfaction and the prevailing confusion on the No. 1 book grade. Reports indicate that mixed books are being shipped to mills under the No. 1 book classification. OPA ceiling prices prevail.

Collection of waste paper throughout the country is up and now averages about 80,000 tons weekly.

Twine

No important change in prices or in the market situation in twine, has been reported at this date. Prices are firm. Demand continues heavy in all leading grades of hard and soft fiber twines.

Sanitary Paper Situation Acute

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 16, 1942—The situation in both kraft and toilet tissues is very grave in this area, so much so in fact that three or four of the larger converters of toilet paper have been compelled to go out of business in the last six months, and it is reported that one nationally known manufacturer of toilet tissue has discontinued making sales through chain stores, which have heretofore stocked their various tissue lines. This has worked a hardship on the consumer as a whole, but a concrete case of the Board of Public Education in Philadelphia is cited to show the scarcity of sanitary papers. It is stated that a representative of the board threatened to close their wash rooms if supplies of the requisite tissues continue to be curtailed. Concerning the paper bag industry, conditions are very acute for the retail dealers with a very limited supply of the smaller sizes available.

This leaves business in the paper industry at this time more or less on the anxious seat. However, on all sides, expression of opinion is that, for the most part of the paper industry as a whole will cling to the good points of the ceilings, set up by Washington voluntarily, and will gladly work with those who will administer, on any sound plan that consolidates the gains already made without infringing on what business has always considered its "rights".

P. H. Graham & Sons Get Award

BOSTON, Mass., March 16, 1942—An award of $96,030.34 to P. H. Graham & Sons Company, Inc., paper stock, was returned against the Boston Housing Authority for taking of land and buildings at 104-126 Ward street, Roxbury, for the Roxbury Housing Project, by a jury before Judge Frank J. Donahue in the Suffolk superior court March 2. It is believed to be the largest assessment ever made by a jury against the Boston Housing Authority.

UNITED PIGMENTS

Pure Titanium Dioxide

UNITANE-O

A brilliantly WHITE, pure, fine titanium dioxide possessing excellent . . .

- **OPACITY**
- **BRIGHTNESS**
- **DISPERSION**

Suitable for ALL types of paper ranging from thin printing papers and waxing tissues to coated book and magazine stocks.

UNITANE O—110 was especially developed for paper pigmentation. Its excellent dispersion in water promotes good retention and excellent sheet formation. As a component of the beater furnish, it produces *whiter* sheets of *great brilliance,* and superior printing qualities.

SAMPLES of UNITANE O-110 will be sent promptly upon request.

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UNITED COLOR AND PIGMENT CO.

DIVISION OF INTERCHEMICAL CORPORATION

NEWARK, NEW JERSEY

SALES OFFICES IN PRINCIPAL CITIES

make APPLETON FELTS good paper

This quality begins with the best wool that can be produced, manufactured under a rigid plant control so that the finished felt meets all modern paper mill requirements for high speed production.

Since 1890 Appleton Felts have year by year kept pace with the rapid progress of the paper industry. Today Appleton Felts are standard for all those characteristics mills prefer in felts.

APPLETON WOOLEN MILLS, APPLETON, WIS.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL
Wednesday, March 18, 1942.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Situation less tight at this date. The pulp is currently quoted at $40 per ton in barrels, at works; the powder is offered at $60 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm. Shipments allocated to consumers. Prices stabilized by agreement with OPA. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are firm. Demand reported fair for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 26 cents per pound; 80-100 mesh at 26½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 22 cents per pound, c.i.f. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are reported firm. Demand active; shipments allocated. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine unchanged. Market under full priority control, with full allocation in effect. Chlorine is currently quoted at from $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on some grades of rosin are lower for the current week. "G" gum rosin is currently quoted at $3.07 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $3.07 per 100 pounds in barrels, New York. Seventy per cent gum rosin size is quoted at $3.39 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand steady for the current week. Domestic salt cake is currently quoted at $15 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. Quotations on imported salt cake are nominal at $16 per ton.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported active. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported steady. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at from $1.75 to $1.85 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices of sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	$8.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$6.00	@	$7.00
Superstandard	5.25	"	6.25
Northern Standard Wrapping	4.75	"	5.25
Standard Wrapping	4.75	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	85.00	"	—

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$40.25 @ $47.25		$41.40 @ $48.50
100% Rag	32.20 " 37.75		33.35 " 39.25
85% Rag	.... "		32.20 " 37.75
75% Rag	24.75 " 29.00		25.90 " 30.50
65% Rag	.... "		22.80 " 27.75
50% Rag	18.70 " 22.75		19.90 " 24.25
25% Rag	16.40 " 20.00		17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers
No. 1	$10.55 @ $12.75		$11.70 @ $14.25
No. 2	9.65 " 11.75		10.80 " 13.25
No. 3	9.20 " 11.25		10.35 " 12.50
No. 4	8.90 " 10.75		10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	45.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.62½	@	4.75
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	4.25
Strong Unbleached Sulphite	3.17½	"	4.25
News Grade, delivered			
Unbleached Sulphite	63.75	"	67.75
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	—
Kraft Light & Strong	No price		
Kraft No. 1	No prices		
(Delivered)			
Kraft Domestic and Canadian	3.00	"	4.00
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.25
Silesias, No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
* Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	@	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40

"NON-USERS ARE THE LOSERS"

PROFIT PRODUCERS

TENAX FELTS

More—MORE—MORE!

Paper and Board are willing servants of wartime industry. Paper and Board production is being speeded as the demand grows greater. And in 1942, as new machinery becomes scarcer, the necessity confronts us of improving production with present equipment.

Clothe *your* machines with TENAX FELTS.

"Non-Users Are The Losers"

LOCKPORT FELT COMPANY
NEWFANE, N. Y.—U.S.A.

ZOPAQUE RG

Pure TiO_2

This grade of TiO_2 shows highest developments of aqueous dispersion and suspension yet attained.

General Preference Order M-44 will govern our distribution of Zopaque beginning January 1, 1942.

We solicit the continued cooperation of our customers.

Sole Selling Agents:
The Chemical & Pigment Company
Baltimore, Md. · Collinsville, Ill. · Oakland, Calif.
Manufactured by
American Zirconium Corporation
Baltimore, Maryland

FARREL ROLLS

EXCEL IN DEPENDABLE, LOW-COST PERFORMANCE

Built into Farrel Rolls are qualities that enable them to give years of dependable service at low maintenance cost. Their bodies and journals are accurate and smoothly finished, shape and amount of crown are scientifically correct, and their chilled body surfaces are uniform in hardness and depth.

These characteristics make Farrel Rolls an important factor in the production of paper of uniform high quality.

Farrel rolls are made in any diameter from 4" to 72" and any face length up to 312", of chilled iron or extra hard Farreloy and Farrel Ni-Hard.

FARREL-BIRMINGHAM COMPANY, INC.
50 State St., Ansonia, Conn.

Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light...	4.25	"	4.50
Wool Tares heavy	4.50	"	4.75
Bright Bagging..	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads.....	4.25	"	4.75
Sisal Strings.....	3.25	"	3.75
Mixed Strings.....	1.10	"	1.20

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts....	3.12½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, one cut.....	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings..	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Mixed Books.....	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut..	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas.....	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft.	2.50	"	—
New 100% Kraft Corrugated Cuttings..	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	1.75	"	—
Old Corrugated Containers	1.00	"	—
Box Board Cuttings.	.72½	"	—
White Blank News.	1.65	"	—
Overissue News.....	.85	"	—
No. 1 News.....	.75	"	—
No. 1 Mixed Paper.	.70	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp.....	.21	"	—
Fine Polished—			
Fine India.....	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers.....	.17	"	—
Tube Rope.....	.19	"	—
Wall Paper.....	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope...	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java.....	.18	"	—
Mex. Sisal.....	.16	"	—
Manila	.36	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07¼	@	.07½
New White No. 2.	.04½	"	.05
Light Silesias.....	.04½	"	.04¾
Silesias, No. 1....	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached..	.07¼	"	.07½
Washable Prints...	.03¾	"	.03½
Washable No. 1..	.02	"	.02¼
Blue Overall.....	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales....	.03¼	"	.03½
New Black Soft...	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas.....	.04¾	"	.05¼
New Black Mixed.	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1.	3.20	"	—
Miscellaneous No. 2.	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1.....	Nominal		
Domestic No. 1...	1.35	"	—
Domestic No. 2...	1.45	"	—
Roofing Bagging..	1.35	"	—
Old Manila Rope...	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope.....	3.75	"	—
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	1.75	"	1.80
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled..	2.50	"	—
Soft White Shavings, one cut.....	2.87½	"	—
White Blank News..	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger.	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Box Board Cuttings.	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News.....	.85	"	—
No. 1 News.....	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut..	2.87½	"	—
Hard White Envelope Cuts, one cut.....	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft.	2.50	"	—
Mixed Kraft Env. & Bag Cuttings.....	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News..	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Overissue News.....	.85	"	—
Box Board Cuttings.	.72½	"	—
New Corrugated Cuttings, Kraft.....	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.25	@	—
Sisal Rope.....	4.00	"	4.25
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.50	"	3.75
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope.....	5.25	"	5.50
Jute Carpet Threads.	3.25	"	3.50
Bleachery Burlap....	8.00	"	8.50
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	4.00
Scrap Sisal.....	4.00	"	4.25
Scrap Sisal for Shredding	4.25	"	4.50
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	4.50
Aust. Wool Pouches.	5.25	"	5.50
New Burlap Cuttings	4.50	"	5.00
Heavy Baling Bagging	5.00	"	5.50
Paper Mill Bagging..	3.00	"	3.25
No. 2 Bagging.....	1.35	"	—

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.04½	@	.04¾
Fancy Percales....	.04¾	"	.05
New White No. 1.	.08	"	.08¼
New Light Flannelettes	.06	"	.06¼
Canton Flannel, Bleached	.08¼	"	.08½
Underwear Cutters, Bleached	.08	"	.08¼
Silesias No. 1.....	.04½	"	.05
New Black Silesias..	.03¾	"	.04
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached....	.08¼	"	.08½
Blue Cheviots.....	.04¾	"	.05
Fancy	.02¾	"	—
Washable	.01¾	"	—
Cottons According to Grades—			
Blue Overalls.....	—	"	.05½
New Black, Soft..	.03¾	"	.04
Khaki Cuttings.....	.04	"	.04¼
O. D. Khaki.....	.04½	"	.04¾
Corduroy	.02	"	—
New Canvas.....	.06	"	.06½
B. V. D. Cuttings...	.07¾	"	.08

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls...	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.55	"	—
No. 2.....	1.45	"	—
No. 3.....	1.35	"	—
No. 4.....	1.35	"	—
No. 5, Quality A...	1.35	"	—
Quality B..	1.20	"	—
Quality C..	.95	"	—
* Old Manila Rope..	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal)
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
White Blank News..	1.65	"	—
Mixed Kraft Env. & Bag Cuttings..	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News.....	.85	"	—
No. 1 News.....	.75	"	—
No. 1 Mixed Paper..	.70	"	—
No. 1 Roofing Rags..	1.55	"	—
No. 2 Roofing Rags..	1.45	"	—

Deubener Invents Paper Presser

W. H. Deubener, 2702 Applegate street, Indianapolis, Ind., who invented the Deubener shopping bag years ago, has just invented and applied for a patent on a home paper presser which is expected to fill a great need in the present emergency. All that is required is to drop waste paper—newspapers, circulars, discarded letters, empty cardboard boxes, and all other waste paper accumulations of the average household, into the press. When it is filled all that remains to be done is to tie the ends of the strings and lift out a neat compact bundle for storage. The presses, it is claimed, will soon pay for themselves in eliminating loss through slipshod methods of saving paper for the government's defense program, besides reducing fire hazards in the home.